

# FACT SHEET

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## MANUFACTURING WORK and CUMULATIVE TRAUMA DISORDERS



### What are Cumulative Trauma Disorders?

Cumulative trauma disorders (CTDs) also known as repetitive strain injuries, repetitive motion disorders, overuse syndrome, and work-related musculoskeletal disorders are the largest cause of occupational disease in the United States and the most frequently reported type of occupational disease in Connecticut. CTDs are injuries of the musculoskeletal system (joints, muscles, tendons, ligaments, nerves, and blood vessels) which are caused by over use as a result of stressful work over a period of time. CTDs can be very painful and can cause permanent damage.

Some manufacturing workers are at risk for developing CTDs. The term manufacturing includes many very different occupations: assembly line work, meatpacking, garment work/sewing, electronic assembly, overhead assembly, and more. **Therefore, it is important to remember that the risk factors that contribute to the onset of CTDs in one industry might look very different than the risk factors in another industry.** CTDs are usually caused by a combination of the following risk factors common to manufacturing work:

- **repetitive motions**
- **forceful exertions** - pulling, pushing, lifting, and gripping
- **awkward postures** - body positions that are not the natural resting position
- **static postures** - body positions held without moving
- **mechanical compression of soft tissues** in the hand against edges or ridges, such as using tools or objects which press against the palm
- **fast movement** of body parts
- **vibration**, especially in the presence of cold conditions
- **mental stress**
- **lack of sufficient recovery time** (rest breaks, days off), which will increase the risk of developing a CTD by any of the above factors.

# WHICH CTDs ARE MOST COMMON AMONG MANUFACTURING WORKERS?

There are many different types of CTDs. The most well known CTDs related to manufacturing work, are **tendonitis**, **carpal tunnel syndrome (CTS)**, **rotator cuff tendonitis**, and **Raynaud's syndrome**.

**Tendonitis** is inflammation of the tendons (bundles of fibrous tissue that connect the muscles to the bones). This happens when a muscle/tendon is repeatedly used or tensed. With continued overuse and lack of recovery time, some of the fibers that make up the tendon can actually fray or tear apart. Commonly affected areas are the wrists, elbows, and shoulders. Physically demanding occupations like buffing/grinding, meat packing, package assembling, and glass cutting create a higher risk for developing this disorder.

**Carpal tunnel syndrome (CTS)** refers to compression of the median nerve as it passes the carpal tunnel in the wrist. Any condition that increases the contents of or decreases the size of the carpal tunnel can cause compression of the median nerve. Commonly reported symptoms of CTS include numbness, burning, and tingling in the first 3 ½ digits. If left untreated, symptoms can become much worse and may result in loss of grip strength, clumsiness, increased pain at night, and possibly permanent loss of hand function. Because job-related tasks require repetitive bending and flexing of their fingers and wrists, assembly line workers, butchers/meat packers, and garment/sewing workers are some of the workers vulnerable to developing CTS.

**Rotator cuff tendonitis** the most common shoulder tendon disorder, is often associated with work that requires the elbow to be in an elevated position for long periods of time, such as when performing overhead tasks. These tasks put stress on shoulder tendons and arm sockets. This can give rise to “frozen shoulder” syndrome, which may include severe pain and the loss of shoulder function. When jobs such as welding and automotive assembly are required to be performed overhead, they can contribute to the development of rotator cuff tendonitis.



**Raynaud's syndrome**, also referred to as “vibration white finger” or “hand-arm vibration syndrome,” is a condition caused by forceful gripping and/or prolonged use of vibrating tools such as hand-held power saws and power drills. The risk of Raynaud's syndrome is even higher when vibrating tools are used in cold temperatures. Symptoms include numbness and tingling in the fingers, skin that turns pale and cold, and ultimately loss of sensation and muscle control in the fingers and hands. Automobile parts assembly and similar jobs which require the use of vibrating tools can contribute to the development of Raynaud's syndrome.

## HOW CAN CTDs BE PREVENTED?

Proper equipment, tool design, and layout of the work area along with good work practices (i.e., routinely alternating tasks, slowing down and taking regular breaks from repetitive work), are ways to prevent a CTD. Use this list to help you become more aware of your equipment, tool design, work area layout, and work practices. Remember, CTDs can be prevented.

- Insulated tool handles (or vibration isolating handles) help protect against impact or vibration.
- Hand tools with smooth, rounded edges and long handles are better than tools with hard edges and short handles.
- Reduction of work rate, over time, and pain inducing activities.
- Work station layout is very important. Your tools, parts, and equipment should be easy to reach without excessive stretching or bending.
- Job rotation or reassignment as well as having a variety of job duties is helpful in stopping CTDs from occurring. Using different muscles and body parts helps to prevent CTDs caused by repetition, force, and awkward posture.
- Regular breaks give your muscles/ tendons time to heal naturally from repetitive motions and force.
- Adjusting physical factors in the work environment such as temperature, lighting, and humidity can also help prevent CTDs.
- The ability to get up and move around whenever you feel any pain or tingling in your neck, shoulders, arms, or hands is essential to the prevention of CTDs.

These recommendations are part of a science called ergonomics. **Ergonomics** is the study of fitting the job to the person rather than forcing the person to fit the job. An **ergonomist** is a trained professional who is qualified to evaluate and make recommendations regarding work areas, work organizations, work practices, tools, and equipment. For example, an ergonomist might suggest adjusting an assembler's or packer's work area to fit that individual's height and arm reach to reduce bending and reaching. This will help prevent the development of a cumulative trauma disorder like tendonitis. Once a CTD has developed, however, early diagnosis and treatment are very important in order to prevent further or permanent damage.



## WHAT SHOULD YOU DO IF YOU THINK YOU HAVE A CTD?

- Consult your doctor or an occupational health clinic. Discuss non-surgical treatments and work with your doctor to reduce risks. Let him/her know of your concerns.
- Keep track of your symptoms and their frequency.
- Keep track of which tasks cause you pain. This can be very helpful to your doctor
- Keep track of postures that strain your neck, shoulders, elbows, wrists, hands, or back. Bending, stooping, twisting, and reaching, are examples of awkward postures.
- Learn more about Cumulative Trauma Disorders and their symptoms. Know what to look for. Share your information with your physician.
- Learn how to prevent Cumulative Trauma Disorders.
- Recommend to your Health and Safety Committee that an ergonomic committee be formed to identify commonly experienced CTD problems and discuss possible solutions with your employer.

# WHERE CAN I FIND MORE INFORMATION?

For more information about Cumulative Trauma Disorders contact

- Your doctor or an occupational medicine clinic
- Connecticut Department of Public Health, Environmental and Occupational Health Assessment Program  
(860)509-7740  
[www.ct.gov/dph/occupationalhealth](http://www.ct.gov/dph/occupationalhealth)
  - Connecticut Department of Labor  
CONN-OSHA Consulting Services  
860-263-6900 (Employer Referral Only)  
<http://www.ctdol.state.ct.us/osha/consulti.htm#Consulting%20Services>
- Ergonomic Technology Center of Connecticut UCONN Health Center  
(860)679-2893  
<http://www.oehc.uhc.edu/ergo.asp>
- National Institute for Occupational Safety and Health - Ergonomic Guidelines for Manual Material Handling  
<http://www.cdc.gov/niosh/docs/2007-131/>
- National Institute for Occupational Safety and Health - A Guide to Selecting Non-Powered Hand Tools  
<http://www.cdc.gov/niosh/docs/2004-164/default.html>
- U.S. Department of Labor, Occupational Health & Safety Administration  
Safety & Health Topics: Ergonomics  
<http://www.osha.gov/SLTC/ergonomics/index.html>

Originally prepared for the Connecticut Department of Public Health, Division of Environmental Epidemiology and Occupational Health and the Ergonomic Technology Center, Inc. by Colleen Mullins, University of Connecticut, Graduate Program in Public Health

May 1996

[Revised November 2008]