

Ergonomics: Micro to Macro Success Stories

The OSHA Ergonomics standard was rescinded several years ago, yet many companies continue to establish and/or expand ergonomics programs in their workplaces. Why is that? The reason is that effective ergonomics programs save companies money!

Ergonomic risk factors in the workplace continue to plague many employers. In Pennsylvania in 2004, sprains and strains represented 43.1 percent of the claims by nature of injury. The number one cause of accidents or exposure was overexertion, accounting for 31.5 percent of cases. The mismatch between the physical demands in the workplace and the physical capabilities of workers results not only in excessive workers' compensation costs but also in losses from decreased productivity, reduced work quality, increased turnover and diminished worker satisfaction. Also, while there is no specific standard, OSHA does cite under the General Duty Clause, 5(a)(1).

There are many examples of success stories. The OSHA Web site contains over 40 examples of successful ergonomics programs from a wide variety of employers. In some of these case studies, several different exposures where ergonomic risk was found and reduced are detailed.



continued on page 2 ... see Ergonomics: Micro to Macro

Sewage Contamination Evaluation

Sewage contamination can arise from pipe leaks or breaks, drain or toilet backups, and even flood waters. Sewage is often referred to as "black water," which is grossly unsanitary and contains pathogenic agents such as bacteria and viruses, body fluids, feces, and possibly blood and other contaminants. As such, it is critical that no one comes in contact with sewage contamination unless he or she is fully trained and protected. Do not allow personnel to walk through the affected area as this will spread the contamination and increase the exposure potential.



Secondary contaminants can arise out of black water sources, affecting building materials in the indoor environment if the sewage contamination is not identified and addressed quickly, i.e., within 24 hours. These secondary contaminants include mold and bacterial growth on damaged building materials and endotoxin generation, which arises from the bacterial contamination.

When a sewage incident occurs, in order to evaluate the extent of the areas affected by sewage contamination and the secondary contaminants, an immediate response is critical – through visual observation, moisture content testing and sampling for "markers" of sewage contamination. Development of remediation plans for immediate cleanup are virtually mandatory.

Trained professionals should perform the cleanup activities using appropriate personal protective equipment, cleaners, disinfectants

continued on page 3 ... see Sewage Contamination

Ergonomics: Micro to Macro ... continued from page 1

For example, L.L.Bean implemented an ergonomics program that included the development of an ergonomics design team. This resulted in a 79 percent reduction in work-related musculoskeletal disorder (WMSD) cases during the first year following implementation. The company has sustained this level of success since then.

How Can Ergonomics Save? Success Story: L.L. Bean

- **The problem:** From 1988 through 1990, 70% of manufacturing time lost was due to WMSDs.
- **The solution:** OSHA logs, WC data and videos were used to identify needs. The ergo design team set up and redesigned several aspects of the company's workstations.
- WMSD lost-time incidents were reduced by 79% and have remained low.
- Wayne Martz, Corporate Health and Safety, L.L.Bean (December 2002).

L.L.Bean

ISSource Safety and Health, Inc. has helped many clients to achieve similar results. The approaches that may be taken range from the very simple, single issue to the more complex and holistic. When addressing single issues, the term microergonomics is often used.



When addressing ergonomics more holistically, the term macroergonomics is used. The definition is as follows: Macroergonomics – A top-down sociotechnical systems approach to the design of work systems and the application of the overall work system design to the design of the human-job, human-machine, and human-software interfaces. The macroergonomics design process is often iterative (design, evaluate, refine, re-evaluate, further refine, etc.), nonlinear (does not proceed in a simple sequential manner) and stochastic (requires making inferences or decisions based on incomplete data).

The definition of macroergonomics can be summarized as designing ergonomics into the job/work process. How important is this to some companies? This quote is from one of the more profitable and professional American companies:

“Global ergonomics is core business at GE.” (May 2005)

Whether you would like help addressing single issues or developing a more holistic approach to the management of ergonomic risk, we can help you. For questions or assistance, please contact Colin J. Brigham, CPE (Certified Professional Ergonomist) at 888-873-9983, ext. 24 or cbrigham@1ssh.com.

Lead in Building Renovations



If you occupy a building built before 1978, there may be lead-based paint on interior structures such as woodwork, sheetrock walls, block walls, doors, windows, or plaster walls. In addition, the exterior of the building may be painted with lead-based paint. Proper planning of renovations will help prevent employee exposure and building contamination.

Determining whether lead paint is present is the first step in the planning process. A survey can be done by collecting representative paint samples and submitting them for analysis, or by conducting a survey of painted surfaces with an XRF analyzer. An experienced lead surveyor and risk assessor should conduct the survey. Some states and local governments require the surveyors and contractors conducting lead abatement to be licensed.

If lead is present, the contractor must comply with the requirements of the OSHA Lead in Construction standard, 29 CFR 1926.62. In particular, the contractor may need to provide medical monitoring, hand-washing facilities, protective clothing and respiratory protection. The degree of employee protection will depend on the actual or anticipated concentrations of lead in the air during the various operations.

Personal air sampling will determine if employees are exposed at or above the action level of 30 micrograms of lead per cubic meter of air ($\mu\text{g}/\text{m}^3$) or the permissible exposure limit (PEL) of 50 $\mu\text{g}/\text{m}^3$. The OSHA standard lists several operations that would be expected to expose workers to concentrations exceeding 50 $\mu\text{g}/\text{m}^3$ but less than 500 $\mu\text{g}/\text{m}^3$, or less than 10 times the PEL. These operations include

- Manual demolition of sheetrock or block walls
- Dry manual scraping or sanding
- Paint removal using a heat gun
- Power tool cleaning with HEPA dust collection

continued on page 3 ... see Lead in Buildings

Sewage Contamination ... continued from page 1

and sanitizers. In general terms, porous materials directly contacted by black water should be discarded.

Nonporous surfaces and contents are typically cleaned and disinfected. Semiporous surfaces, such as concrete and



finished wood furniture, can be cleaned although some harmless staining may remain. Valuable documents or contents can be addressed on a case-by-case basis to protect their integrity as well as those individuals who will handle them in the future.

Upon completion of the cleanup activities, we strongly recommend a post-cleaning evaluation that includes sampling for certain bacteria and other contaminants to check the effectiveness of the cleaning and disinfection processes.

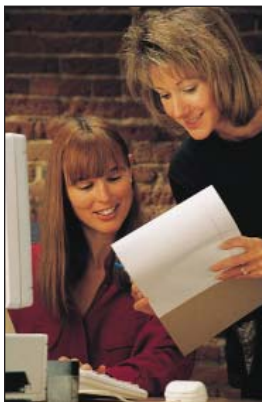
1Source has the experience and the professionals to assist clients in addressing sewage contamination quickly and effectively, which reduces the potential for health concerns, property damage, business interruption and liabilities. For additional information, please contact Harry M. Neill, CIH Vice President at 888-873-9983, ext. 15, or hneill@1ssh.com.



We're Already Working ...

The editors of *The Risk Factor* are already working on future issues. Here are a few of the stories you'll be seeing:

- Bird and Bat Excrement Concerns
- Industrial Hygiene Surveys
- Mold During Construction



How to Accommodate the Aging Work Force

The work force is aging. People are living longer, baby boomers are sticking around the workplace instead of retiring and many retirees are signing on as part-time consultants for their previous employers. Along with the aging workforce come age-related safety issues.



According to Jack Dobson, president of the American Society of Safety Engineers, businesses need to take action now to provide the safest environment possible for aging workers. Here are some of his suggestions:

- Improve illumination and increase color contrast in the workplace.
- Eliminate all heavy lifting, elevated work (from ladders) and long reaches.
- Reduce noise levels in the workplace.
- Install skid-proof flooring materials and stair treads.
- Provide time for workers to practice skills and become familiar with tasks.

Lead in Buildings ... continued from page 2

In addition, some operations such as welding on painted steel may expose the worker to concentrations of lead exceeding 2,500 $\mu\text{g}/\text{m}^3$, or more than 50 times the PEL. Paint must be removed from steel before welding to prevent the generation of highly concentrated lead fumes.



Lead dust remaining on surfaces may expose building occupants or the public. Lead dust and paint chips must be cleaned by HEPA vacuuming and wet wiping with trisodium phosphate (TSP). For more information on lead in paint, please contact Daniel Bruun, CIH 610-524-5525, ext. 17, or dbruun@1ssh.com.





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DEDICATED TO THE SAFETY AND HEALTH OF YOUR BUSINESS AND ITS EMPLOYEES 2ND QTR – 2006

How Much Is Spam Costing Businesses?

A new study by the University of Maryland reports that spam is costing American businesses almost \$22 billion a year because of the time wasted by employees deleting junk e-mails. The survey of adults who use the Internet found that more than 75 percent receive junk e-mail every day. According to the study, only 14 percent of spam recipients read their junk e-mails. Four percent of the respondents said that they have bought something advertised by spam. One thousand adults were surveyed by phone. – Adapted from CNN.com

Are Your Co-Workers Germy?

Do you grimace when you hear one of your co-workers hacking and sneezing behind you? Well, according to Ron Goetzel, the director of Cornell University's Institute for Health and Productivity, you probably should. Why? Because it's likely that that person is going to cost you some time off by infecting you with what he or she has drug into the office. You might ask, Why don't these people just stay home? Some people are afraid that it will reflect poorly on them to miss work, some people fight the notion that they are sick at all – so you are a victim of their denial, and some people, frankly, can't afford to take the day off because they won't get paid. So what's an office germophobe to do? Here are a few ways to stay healthy in the office – even when there are others there who aren't.



- Keep your desk clean. That means disinfecting it every day. Yes, that's right – every day.
- Make a habit of cleaning your desktop tools. This means disinfecting your phone, your mouse pad and other items that you regularly touch.
- Wash your hands frequently. You should wash your hands for 20 to 30 seconds with warm soapy water. That means that you'll have just about enough time to sing "Happy Birthday" twice if you're washing your hands properly.
- Keep tissues on hand to break sneezes and muffle your coughs. This will help to some degree to keep your germs from traveling so far in the office.
- Keep yourself in good general health. This means getting enough sleep, eating a healthy diet and drinking lots of liquids.
- Try to maintain a cleanliness regimen at all times. Remember that people are contagious before they exhibit symptoms and after the symptoms are no longer apparent.

Hate Changing Into Safety Shoes?

Perhaps safety toes can help

People who don't often go into a plant or visit a construction site still need to protect their feet on those occasions. Problem is, they don't like to change their shoes so they might ignore the rules of safety and common sense. A more convenient option could be a pair of safety toes. Like the overshoes men used to wear to keep dress shoes dry, they slip right over the shoes you are wearing. They have a solid steel cap to protect the toes against accidental crushing or stubbing. And because they don't touch the wearer's feet, they can be passed from person to person. You could lend yours to someone else. Safety toes offer a high level of protection and conform to OSHA rules. Plus, they are compact and easy to store. Since their introduction in 1996, many companies have used them as part of their safety programs.

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