

Compliance Headliner

Common Indoor Airborne Contaminants at Work and Home

When should you consider respiratory protection?

**Reference: University of Maryland, Indoor Air Quality Fact Sheet 2000 and Environmental Assessment Association Air Quality Information for Environmental Inspection*

As with most things in life, we have to accept some risks with respect to the air we breathe...both indoors and outdoors. Although it may seem that outdoor air should be laden with higher pollutants because it has not been "conditioned", a growing body of scientific evidence has indicated that the air within homes and other buildings can potentially be more polluted than the outdoor air. Furthermore, research has shown that most people spend approximately 90% of their time indoors. The good news is that, oftentimes, hazards associated with indoor air quality can be minimized and even eliminated. The challenge is to be able to recognize the signs of poor air quality and be aware of solutions to rectify contributory problems.

Pollutants can be present in the form of gases, vapors, particulates, fungi, or molds. They can be released indoors through such sources as household cleaners, paints used for decorating, insecticides, malfunctioning heaters/stoves, asbestos-containing material, cabinets/furniture made from certain types of pressed wood, damp carpet, house pets and even indoor plants. Coupled with inadequate ventilation (which helps to dilute indoor emissions) from the outside, these pollutants can accumulate and create health hazards. Additional factors may include high temperature and humidity within a building.

Three fundamental components determine the quality of air in any given location: 1) amount of oxygen (outdoor air), 2) temperature/humidity, and 3) presence and concentration of airborne contaminants. Oxygen is normally present in the atmosphere at a concentration of approximately 21.5%. Fresh air is introduced into most buildings through centralized ventilation (which distributes filtered and conditioned outdoor air), small local fan units (which move air around in a single area), passive diffusion (natural movement of air between areas due to temperature differences and/or wind), or by a combination of these.

Oftentimes, buildings that rely entirely upon mechanical means to bring air indoors incorporate systems that blend outside air with recirculated air that has previously been conditioned. This type of system introduces fresh air into the building while maintaining energy efficiency.

One indicator of adequate fresh air levels (as well as contaminant removal) is the concentration of carbon dioxide in an area. There is a natural background concentration of carbon dioxide in the atmosphere that is rarely above 400 parts per million (ppm) by volume. As people breathe, carbon dioxide is produced which enters the indoor air environment. If there is insufficient air exchange (fresh air in - "stale" air out), the carbon dioxide levels rise. The legally permissible carbon dioxide concentration to which workers may be exposed for eight hours per day has been established by OSHA at 5000 ppm. It should be noted, however, that carbon dioxide generally parallels that of other contaminants of greater concern...such as carbon monoxide, tobacco smoke, microorganisms, and *(continued on page 3)*



Coupled with inadequate ventilation from the outside, indoor pollutants, such as pet dander and molds can accumulate and create health hazards.

INSIDE THIS ISSUE:

Portable Wooden and Metal Ladder Safety	2
What's New at Crandall?	2
How Do You Handle an Employee Who Takes Advantage of Your "Safety Program?"	3
NIOSH Finds No Evidence that Back Belts Reduce Injury	4
The Dangers of Misused and Damaged Power Tools	4

Special Points of Interest:

The "All-In-One" poster, featuring six required employment notices can be obtained (at no charge) from OSHA (803-896-4380), SC Employment Security Commission (803-737-2474), SC Human Affairs Commission (803-737-7800), or SC Workers Compensation Commission (803-737-5700). Call today to get your updated copy...

Portable Wooden and Metal Ladder Safety

Portable ladders are used in a wide variety of settings, both at work and at home. Misuse of portable ladders can result in serious injuries from falls or, in the case of metal ladders, electrical shock. Portable ladders must be maintained in good condition and inspected at regular, frequent intervals. Training is also an important aspect of portable ladder safety and accident prevention. The Occupational Safety and Health Administration (OSHA) requires certain specifications for portable ladders, and a summary of those are described below...

Portable ladders should be inspected at frequent, regular intervals and maintained in good condition...free from oil, grease, or other slippery materials. Defective ladders should be removed from service until repaired. Those that cannot be repaired should be destroyed.

When setting up a ladder, it is important to establish a proper angle. A simple rule for setting up a ladder is to place the base of the ladder approximately one-fourth the length of the ladder from the fixed object that serves as support

for the ladder. For example...if a ladder has a length of 8 feet, the base should be set out 2 feet from the vertical support object to achieve a proper angle. Ladders should always be placed on stable bases. And objects below and around the ladder should be removed, as they may create clutter. Boxes, barrels, or other unstable surfaces should never be used to obtain extra height. Additionally, ladders should not be placed on slippery surfaces unless secured by holding or lashing.

Portable wooden ladders should not be constructed of low-density wood and must be maintained free of sharp edges, splinters, and other visual defects. Prior to use, each ladder should be inspected for shake, compression failures, decay, or other irregularities and removed from service if found defective. Wooden ladders should never be painted. Paint may hide defects that could lead to ladder failure. Per OSHA standard 1910.25(b)(2), wooden stepladders are not to exceed 20 feet in length (excepting painter's stepladders that must not exceed 12 feet in length). Single-section portable ladders are not to exceed 30 feet in length, while two-section extension ladders are not to exceed 60 feet in length. As with wooden ladders, portable metal lad-

ders should be inspected before use and removed from service if found defective. Because metal ladders will easily conduct electricity, they must never be used for work on or near exposed electrical conductors. Metal stepladders are not to exceed 20 feet in length. Single-section ladders are not to exceed 30 feet in length, while two-section ladders are not to exceed 48 feet in length. Portable metal ladders with more than two sections are not to exceed 60 feet in length.

Training should cover the proper use, inspection of, and hazards related to portable ladders. Those who use ladders near exposed electrical conductors operating at 50 volts or more should also receive training in Electrical Safety-Related Work Practices. Be mindful that these are suggested guidelines. Specific equipment should always be inspected for additional precautions that may be warranted.

**Reference: OSHA 29 CFR, 1910.2.*



Ladders should not be placed on slippery surfaces unless secured... and objects below and around the ladder that may create clutter should be removed.

What's New at Crandall?

Personnel Announcements... Crandall is pleased to announce the addition of two new staff members within its Regulatory Compliance Services department. **Mr. Richard McEachern** began his career in 1985 as a Compliance Officer with Federal OSHA. Following his time with OSHA, Richard worked for Mobil Oil Corporation as a Safety Engineer. In 1995, Richard was hired as Safety Manager for a privately owned specialty chemical plant and became extensively involved in Process Safety Management. Richard is a Certified Safety Professional and has a Bachelor of Science in Marine Science. **Ms. Rebecca Wheeler** joins Crandall following a position in South Carolina Department of Health and Environmental Control's Underground Storage Tank Enforcement Division. Rebecca is a graduate from Clemson University and holds a Bachelor of Science in Wildlife Biology. She is currently enrolled at the University of South Carolina, seeking a Masters of Science in Industrial Hygiene. Crandall is excited about the experience and knowledge that is brought to our "team" by our staff additions. We look forward to introducing them to our clients as they become intimately involved in their respective areas of account management.

Environmental and Safety Training Workshops... Available at no cost for our Compliance Management Program clients, Crandall will be offering an *OSHA Compliance Course for Managers*, *EPA Compliance Course for Managers*, *Hazardous Materials Transportation Certification Course*, and an *OSHA Recordkeeping Guideline Course* during the upcoming summer and fall months of 2001. Look for our facsimile notices...or contact your Account Manager for more information at 800-248-4801.

Absorbent Recycling Program... In response to client needs, Crandall is introducing our latest environmental service, referred to as our Absorbent Recycling Program. After extended research into disposal (*continued on page 4*)

Common Indoor Airborne Contaminants at Work and Home

When should you consider respiratory protection? (continued from page 1)

Because temperature and humidity immediately affect people's perception of their environment, as well as their performance, indoor air should remain lower than 87 ° F, with relative humidity below 70%.

organic vapors. Therefore, a lower level of carbon dioxide should probably be maintained. Temperature and humidity are two factors that immediately affect people's perception of their environment, as well as their performance. For working conditions, indoor air temperature should remain lower than 87 ° F, and relative humidity should be maintained below 70%. The definition of acceptable indoor air quality is air in which there are no known contaminants at harmful

levels, and in which 80% or more of the occupants do not suffer systematic discomfort. There are many potential contaminants that could affect indoor air quality, as mentioned above. Worker exposure levels, or Permissible Exposure Limits (PELs), have been established by OSHA for hundreds of substances ranging from carbon monoxide...to turpentine...to common nuisance dust. Often, contaminants are generated from sources external to particular indoor environment. Therefore, it is extremely important to evaluate the effectiveness of the ventilation system, with particular focus on the location of the fresh air input.

Other common contaminants of indoor air include bacteria and fungi (molds, mildew and yeasts). These microorganisms are always present in the air, but excessive concentrations may cause health problems. There are no enforceable standards establishing "safe" limits. But many indoor air quality professionals have recommended that levels exceeding 1000 colony forming units per cubic meter of air (CFU/m³) suggest needed improvement or investigation of the indoor air conditions. High humidity, recent flooding, natural springs running through open crawl spaces, or free standing water are conditions which readily promote high concentrations of microorganisms in the air. These conditions often produce characteristic odors. Some molds may develop on the outside or underside of a home, and colonization will allow the microspores to enter the home through cracks, the foundation, and ventilation mechanisms. One of the more commonly cited health concerns is Legionnaires Disease, which occurs from exposure to significant concentrations of the bacterium *Legionella pneumophila*. Another term, "Sick-Building Syndrome" has been used to describe a class of complaints characterized by nonspecific discomfort, headache, upper respiratory irritation, cough, dry or irritated skin, and sensitivity to odors. Sick Building Syndrome incidents generally occur in buildings that are exclusively mechanically ventilated. There are many suspected causes for this type of problem, but remedial ventilation alterations usually provide relief by supplying increased amounts of fresh air, or by removing more "used" indoor air. Studies have shown that exposure to a rare, but dangerous bacteria, called *Stachybotrys*, can cause severe health problems, such as central nervous system damage, pneumonia, chronic asthma, and even permanent brain damage.

Prevention of airborne contaminant accumulation indoors is the method of choice over remedial action. General weekly housekeeping should be conducted and should include a wipe down of all surfaces with a damp cloth. Additionally, carpets and furniture should be cleaned thoroughly (professionally) on an annual basis. Ventilation (natural or mechanical) should be designed to allow a substantial and continual amount of fresh air indoors, while directing stale air outdoors. Mechanical ventilation systems that condition and filter air also lower the humidity...leading to better indoor air quality. However, all systems should be inspected and properly maintained.

How Do You Handle an Employee Who Takes Advantage of Your "Safety Program"?

You've developed policies, trained supervisors and workers on safe work practices, provided safety equipment, and even improved some processes to enhance safety in your company...all in accordance with federal and state laws. So what

do you do when you suspect that an employee is taking advantage of OSHA regulations or the Workers Compensation system? We've said it before and we'll say it again...documentation, documentation, and documentation. That's the most logical place to start and is the crucial factor toward addressing conflicts (whether they are real or perceived). Review the following documentation - tips:

- Document information covered during safety training (and consider addressing your company's policy for the distribution or replacement of personal protective equipment);

- Have all employees sign a statement that acknowledges their attendance and comprehension of the material covered;
- Keep your safety training records together and well organized. Don't leave OSHA with the wrong impression during an unannounced inspection;
- Have each employee who is required to wear safety equipment (such as safety glasses, gloves, respirators, etc.) sign a statement that acknowledges receipt and proper use of such equipment;
- Conduct periodic safety inspections of the work area for the purpose of compliance with company policy and assurance of use of personal protective equipment. Distribute written warnings to employees who are not practicing safety protocol;
- Develop a disciplinary action system for repeated safety infractions...and enforce them!
- Set an example and encourage safety procedures by "practicing what you preach..."



"Conduct periodic safety inspections of the work area for the purpose of compliance"

What's New at Crandall?

Absorbent Recycling Program (continued from page 2)

alternatives, we believe that we have found a product that will provide better absorbency for a wide variety of substances, minimize waste, and reduce costs associated with absorbent disposal management. The general protocol consists of the following: trained technicians will deliver clean (available in 18"x18", 24"x36", or 36"x72") and empty DOT labeled storage drums. As the drums become full and in accordance with our pre-arranged service schedule, Crandall will pick up soiled pads and leave clean bundles (and empty storage drums). One of the key benefits of this program is that spilled material can be absorbed and recycled, thereby eliminating some waste streams and/or RCRA reporting. Used absorbent pads are processed through a centrifuge to extract and reclaim any waste oil or residual liquids for recycling. Absorbent pads are then cleaned via a closed loop process and returned for reuse. Please contact Crandall to receive more information about this new service at **800-248-4801, Ext. 299**. According to the specific needs of your facility, Crandall will design an appropriate level of service.



associated with the bundles of absorbent pads become full and in empty DOT labeled storage drums. One of material can be absorbed streams and/or RCRA reporting. Used absorbent pads are processed through a centrifuge to extract and reclaim any waste oil or residual liquids for recycling. Absorbent pads are then cleaned via a closed loop process and returned for reuse. Please contact Crandall to receive more information about this new service at **800-248-4801, Ext. 299**. According to the specific needs of your facility, Crandall will design an appropriate level of service.

Crandall

Environmental, Health and Safety Management

100 Rich-Lex Drive
Lexington, SC 29072
Phone: 803-791-4800
Fax: 803-739-0500

800-248-4801

NIOSH Finds No Evidence That Back Belts Reduce Injury

Congress rejects OSHA's Ergonomics Standard

NIOSH has released the findings of a landmark study indicating there is no evidence that back belts reduce back injury or back pain for retail workers who lift or move merchandise. The study, conducted over a two-year period, found no statistically significant difference between the incidence rate of workers' compensation claims for job-related back injuries among employees who reported using back belts or using them no more than twice a month. The published report can be found in the December 6th

issue of the *Journal of the American Medical Association*. These findings are inconsistent with OSHA's final Ergonomics Standard (which was rejected by Congress on March 7, 2001 and holds no legal standing), which includes back belts as personal protective equipment. This apparent disagreement, which could create a policy dilemma, is unusual and may be (in part) due to the recent strike down of the Ergonomics Standard.

The Dangers of Misused and Damaged Power Tools

**Reference: University of Maryland, Department of Environmental Safety, Fact Sheet*

Hand and power tools enable employees to apply additional force and energy to accomplish a task and improve efficiency. Because of the increased force that power tools provide, the objective of safety is to use each tool properly and protect exposed body parts from injury. Disabilities resulting from misuse of tools or using damaged tools include loss of eyes and vision; puncture wounds from flying chips; severed fingers, tendons, and arteries; broken bones; contusions; infections from puncture wounds; ergonomic stress, as well as many other injuries.

A summary of applicable OSHA standards include the following points of interest and guidelines: 1) Each employer shall be responsible for the safe condition of tools and equipment used by employees, including tools and equipment which may be furnished by employees. 2) Compressed air shall not be used for cleaning purposes except where pressure is reduced to less than 30psi, and then only with safety glasses with side shields. 3) Employers shall ensure that proper protective gear is worn by employees (this rule generally implies that employers shall provide such necessary equipment). 4) Tools must be equipped with safety switches (type is dependent on blade shank or wheel size) and must not be loaded until the intended firing time (e.g. nail gun). 5) In general, all tools and blades must be in a good condition and have the appropriate guarding. Blades of a fan must be guarded when less than 7 feet off the floor or work level. 6) Employers shall ensure that the right tool is used for the job (by training employees on proper selection, enforcing safety rules and implementing a disciplinary action process).

Periodic inspections provide a consistent measure of normal activities and conditions. Employers should document such inspections and correct any situation noted that may present a hazard. However, for everyday purposes, it may be unfeasible for a supervisor to walk through the work area to conduct an inspection on all power tools. That is why it is so important to train employees so that they can recognize a hazardous condition, fix the situation and/or and notify the proper person. Daily inspections should include the following procedures: 1) An inspection of all moving parts; 2) A thorough cleaning of all tools; 3) An inspection of the power cord and electrical outlet to be used. Any questionable equipment should not be used and conditions should be reported to a supervisor.



Because supervisors are not always around when power tools are being used, it is extremely important to train employees so that they can recognize a hazardous condition and fix the situation.