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Department of Occupational and Environmental Safety NEWSLETTER

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Controlling Laboratory Ergonomic Risk Factors

Ergonomics is a means of adapting the work environment to human capacities and needs—in common terms, its a way of fitting the task to the person. In our daily lives in the workplace, we use principles of ergonomics to find positions and tools that minimize stress on the body while working.

All manual and repetitive work done for hours on end places stress on certain areas of the body. This includes many laboratory tasks which require painstaking and lengthy procedures—pipetting, labeling small jars or test tubes, sitting at the microscope, and using the computer. These tasks can contribute to poor posture, repetetive stress injury, and other ailments.

Beginning with this month's article on pipetting, over the coming months the newsletter will provide suggestions for reducing ergonomic risk factors common to the laboratory: awkward posture, high repetition, excessive force, contact stresses, and vibration. By learning how to control laboratory ergonomic risk factors, you can improve employee comfort and productivity while lowering chances for occupational injuries.

Pipetting

Pipetting is one of the most common activites in the laboratory to which repetitive strain injuries (RSIs) can be traced. These tips can help reduce those factors of force, position, and repetitiveness which contribute to the stress this activity places on the body.

To Control Awkward Postures:

• Work with wrists in straight, neutral positions to minimize strain. Incline the sample holder or solution flask, for example, to help keep wrists straight.

(continued on p.3)

New Respirator Standard in Effect

The Occupational Safety and Health Administration (OSHA) has issued a new respirator standard, currently in effect, which is designed to further enhance worker protection. It gives guidelines for more effective and safer use of respirators and outlines the policies and procedures to help employers implement a program for their employees.

Safety Services' revised Respiratory Protection Program reflects these changes in the standard. It delineates the responsibilities of the university,

(continued on p.2)

In This Issue:

What WASTE!

Chemical Storage and Waste Minimization

Storing chemicals properly plays a vital role not only in laboratory safety but in waste management as well. This article will look at the relationship between chemical storage and waste minimization, showing why being safe can be financially and environmentally conscious as well.

1) Designate a person to be responsible. Appoint someone to be in charge of the chemical storage area. This person will be familiar with the chemical inventory and storage procedures, and will (hopefully) practice good housekeeping techniques in the area.

2) Buy and store smaller quantities. Though a big bargain container of a chemical may seem a bargain, it usually doesn't all get used. Instead, it sits forlornly on the shelf, slowly deteriorating, until it is no longer good and becomes a waste disposal item--and the cost of disposing excess chemicals reduces available funds for other university services. Try to keep quantities of chemicals down to the amount you could use in approximately 6-12 months.

3) Store chemicals properly. From a waste minimization point of view, you want to store chemicals in a cool, dry place to reduce factors which may cause degradation. Also, store chemicals in places where they are safe from accidents: on solid shelves with sides and a front safety ridge, for example, instead of on shelves without sides (where they can fall off easier) or on the floor (where they can be kicked over or collided with and break).

4) Segregate by hazard class. It has become the accepted method to store chemicals by hazard class, and then within classes, alphabetically. If this is the method your laboratory chooses to use, make sure everyone knows and adheres to it, putting chemicals back where they belong when they are no longer in use.

(continued on p.6)

New Respirator Standard in Effect

(continued from p.1)

DOES, department supervisors, and the respirator wearers; and it explains all aspects of the new program's requirements: respirator selection, medical evaluation, training, fit testing, procedures for proper use of the respirator, and respirator maintenance.

It also contains CWRU-specific items as well: a means for evaluating program effectiveness, an explanation of exposure and risk assessment, the steps to take if you want our department to determine if a respirator is required for your area or task, and the steps required to complete the program.

We are currently in the process of recertifying current respirator wearers and locating other workers on campus who may need to use a respirator. Call Safety Services (x2907) if you have a concern or if you would like more information on the process.

CWRU's Respiratory Protection Program will be distributed along with the revised Chemical Safety Manual.

Upcoming Training Sessions

Radiation (x2906)

•**New Training:** April 23(1-4); May 7(9-12), 19(1-4)

•**Retraining:** April 30(2-3); May 6(10-11), 17(2-3), 28(10-11)

•**X-ray Training:** call office to set up training session

Chemical (x2907)

•**OSHA Lab Standard:** Mondays 1-3 (Service Building Conference Room)

Bloodborne Pathogen (x2907)

•**New Training:** Mondays 3-4 (Service Building Conference Room)

• **Retraining:** April 21(1-2); May 4(10-11), 21(2-3) in Service Building Conference Room

Controlling Laboratory Ergonomic Risk Factors

(continued from p.1)

• Reduce reaching—use short pipettes, use conveniently-sized solution containers, and properly position waste containers for used tips.

• Keep items in use as close as possible, positioning them to minimize twisting of the neck and torso.

• Work with elbows as close to sides as possible.

• Make sure that your chair provides proper lower back and thigh support and that feet are supported.

To Control High Repetition:

• Automate pipetting tasks.

• Use multi-pipetters whenever practical.

• Share workload between right and left sides.

• Vary pipetter types having different activation motions; for example, switch from using a thumb-controlled to a finger-controlled pipetter.

• Take adequate breaks away from pipetting activity—even short several-second "micro-breaks" help.

• Rotate pipetting among several employees.

• Evaluate work processes to identify high-risk tasks (such as repetitive pipetting). These tasks can then be spread throughout the day and provide the worker with some rest from the strain of repetition.

• Add personnel for peak periods.

To Control Excessive Force:

• Choose pipetters requiring less finger or thumb motion to activate.

• Choose pipetters requiring less force to activate.

• Use only the force necessary to activate.

To Control Contact Stresses:

• Choose pipetters that best fit your hand.

• Do not rest forearms on sharp work surface edges; pad edge or forearm if necessary.

Safety Services can also help by doing an ergonomic evaluation of your workstation and possibly making some recommendations to improve the situation. For further information, call Dick Harley (x5865) or Paige Wietelman (x2739) at Safety Services.

Future editions of the newsletter will discuss ergonomic solutions for handling test tubes and using microscopes.

HOT TIPS

Lose Your Badge?

If you "temporarily misplace" your badge, come to the Radiation Safety Office so you can fill out a Lost Badge Form. Our office needs this information so we can assign an estimated dose to the badge for that wear period and include it on your exposure history.

Many people only tell us about a misplaced badge when they come in to exchange it at various points throughout the year. Despite the philosophical difficulties of exchanging a badge you no longer have, its also easier to compute an estimated dose to the badge if we know how long you've been without it. Therefore, we would prefer that you inform us of the missing badge as soon as you notice it's disappearance, rather than waiting those weeks or months until the next badge exchange time.

We can also mail you a form if you'd like; call the Radiation Safety Office at x2906 for a form or if you have any questions.

CHEMICAL SAFETY MANUAL UPDATE

In last month's newsletter we reported that new Chemical Safety Manuals would be distributed to all PIs. It is taking a little longer than expected, but we want to give PIs the most current version of all our documents. We will hand out the manuals as soon as possible.

CONGRATULATIONS

to the Chemistry and Macromolecular Science Departments! All chemical-use PIs in these departments have submitted Chemical Hygiene Plans to Safety Services, helping assure a safer working environment for everyone in their departments. Good work!

CWRU Research Laboratory Relocation

Whether you're moving across the street or across the country, PIs and AUs whose research laboratory will be relocated have to perform a number of steps to ensure that the move is done safely. The Department of Occupational and Environmental Safety (DOES) has developed the following list of procedures to help with the move.

Moving a CWRU Laboratory

These procedures must be followed when preparing to move to another location within the university campus:

1. Send a letter to DOES 3 weeks prior to relocation. All of the following must be completed prior to your relocation.

2. If chemicals must be moved on highways surrounding the campus, they must be packed and moved by professional services. Even when chemicals are moved by hand between buildings, many of these chemicals must be professionally packed and moved. Therefore, contact DOES for advice on these matters. A representative from DOES will advise you on procedures for your move and arrange for a contractor to move your chemicals according to DOT standards.

3. All RAM inventory and all chemicals that will not be taken to your new location must be either disposed of by DOES or transferred to another PI or AU. Any CWRU investigator to whom you transfer part of your chemical inventory must present an acceptance letter for receipt of that material and an updated chemical inventory to the Chemical Safety Office. All chemical, radioactive, biohazard, and SHARPS waste must be removed prior to moving—the lab should not contain leftover chemicals or materials upon departure.

4. List all unwanted bottles of chemicals and their quantities separately on a Waste/Recycle form available from the Chemical Safety Office (368-2907). Make sure to include an account number (for tracking purposes) on the Chemical Waste/Recycle form; otherwise, the material cannot be taken from the site.

5. Dispose of all pathological waste (carcasses, body parts, organs, andtissues) and microbial (infectious) waste (cultures, petri plates, specimen, and contaminated cloths and paper items) before moving your laboratory. REMEMBER TO AUTOCLAVE THE MICROBIAL (INFECTIOUS) WASTE BEFORE DISPOSAL. Call the Chemical Safety Office at 368-2907 with questions.

6. Make sure that all equipment is decontaminated. Equipment which will be moved by professional movers to another location on or off campus must be cleaned. All radioactive and hazard stickers must be removed. If you use carcinogenic, biohazardous, or other hazardous materials, these hazards must be eliminated prior to handling of the equipment.

7. Complete a radioactive material decommissioning survey for all of your rooms. The survey should be done after the lab has been cleared out and the equipment has been inspected. Follow the DECOMMISSIONING guidelines in the Radiation Safety Manual.

8. Present your survey results for all rooms and equipment to the Chemical Safety and Radiation Safety Personnel for approval. All sewer disposals and transfers of isotopes and chemicals must be thoroughly documented.

9. Remove radiation, chemical, and biohazardous labeling from the laboratory when informed to do so by the Radiation Safety Office and Chemical Safety Office.

Terminating a CWRU Laboratory

In addition to the above steps, PIs and AUs who are leaving the University and terminating their research here have the following additional responsibilities:

1. All equipment that has a CWRU inventory control sticker must be released from the uni-

(continued on p.5)

CWRU Research Lab Relocation

(continued from p.4)

versity. In addition, the facility to which you will be moving must accept the equipment into their facility by written reply.

2. All mechanical, electrical, and other laboratory equipment that is to be removed from the University must be evaluated by DOES. The survey must also include an inspection of PCB check (e.g. capacitors and transformers found in electric/electronic equipment) performed by Plant Services prior to removal. Contact the Chemical Safety Office for PCB inspection and proper labeling if the equipment is to leave the University or to be placed in the University storage area.

3. All chemicals need to be packed and moved by professional services. Contact DOES for advice on these matters. A representative from DOES will arrange for a contractor to move your chemicals according to DOT standards. A letter from the receiving facility's Safety Officer acknowledging acceptance of the materials must be presented to CWRU Chemical Safety Office.

4. If radioactive material is to be transferred to another location, an EXTERNAL TRANSFER form must be completed following the guidelines in the Radiation Safety Manual.

5. Give the RSOF a list of all laboratory personnel leaving CWRU. If some personnel are staying at CWRU, indicate where on campus they will be working.

6. Return all film badges.

Contact DOES (x2906 or x2907) if you have any questions concerning the above procedures. It is important that these items be completed before you leave.

Proper Fire Alarm Response

All campus buildings have fire alarm systems in place which signal to Security when they are activated. When Security receives an alarm from any building they immediately summon the Fire Department. If an alarm goes off, the Fire Department will come.

During several recent responses to campus alarms, firefighters have found uncooperative people in the area of the alarm. This is unacceptable: when firefighters arrive at the scene they expect the building or area under alarm to be evacuated; they do not expect to see people entering a building that has an active alarm situation in progress. This behavior by members of the campus community can never be tolerated by the responding firefighters because it hinders their primary purpose: to discern the cause of the alarm and to protect life and property if necessary.

The university can be cited by the Fire Department for the kind of behavior which has been exhibited: the buildings under alarm and the surrounding area have remained occupied with people milling around, going about their business, complaining about the noise being made by the alarm system. People have also entered buildings or areas where an alarm is still active, further compromising the activity of the Fire Department.

Remember that university policy states that an alarm activation in any building shall be considered an order to evacuate; everyone must respond by leaving the buildings or areas under alarm and must not reenter until the alarm is silenced and the "all-clear" issued.

We realize that evacuating during alarms, especially when they frequently go off, can frustrate ongoing work; however, the alternative—being trapped in a fire—is much worse. If everyone follows proper procedures and cooperates with responding Security officers and firefighters, the inconvenience and disruption will be minimal, and no one is likely to be injured or worse by fire.

If you have any questions please contact Dick Harley of Safety Services at 368-2907.

Chemical Storage and Waste Minimization

(continued from p.2)

5) Practice good housekeeping. Work on keeping clutter to a minimum and organizing chemicals thoroughly and consistently. This reduces chances of accidents and over-ordering or duplicate-ordering of chemicals.

From a waste minimization point of view, each laboratory should develop some sort of storage plan, appropriate to the lab, which assures that adequate quantities of chemicals are available when needed but that reduces possible waste from unnecessary ordering or deterioration of chemicals over time.

If you have any questions on chemical storage please call Safety Services at x2907.

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