

# Safety Is An Attitude

University of Nebraska-Lincoln

Environmental Health and Safety

Fall 2004

[Asbestos FAQs](#)

[Size Matters \(in PPE\)](#)

[Radiation Safety Training](#)

[News Briefs](#)

[New Documents](#)

[Training Schedule](#)

[It Happens Here](#)

[Puzzler](#)

[View/Print Entire Newsletter](#)

[EHS Home](#)

## Glove Selection for Chemical Protection



# Safety Is An Attitude

University of Nebraska-Lincoln

Environmental Health and Safety

Fall 2004

## Glove Selection for Chemical Protection

The efficiency of a glove in protecting the wearer from chemical hazards depends on many variables, including proper fit, materials of construction, and use.

### **Selection for chemical protection**

Exposure of the skin to chemicals can result in irritation or absorption into the body and result in various health effects. Review the chemical's material safety data sheet (MSDS) to determine if a chemical poses a skin absorption or contact hazard. Most chemicals do pose these types of hazards. When using a chemical that presents a contact or absorption hazard, the user must select an appropriate glove to protect against the hazard.

Gloves are available as a single polymer or layered by two or more other polymers to increase breakthrough time and to offer protection to a wider range of chemicals. Breakthrough time is the time required for a chemical to be detected on the inside of the glove after contact.

[View the most common type of polymers](#)

There is no glove that will provide protection to all types of chemicals. Eventually, all glove materials will fail. Glove failure time varies by the chemical, concentration, duration, temperature, manufacturer, and glove thickness. A rule of thumb for glove breakthrough time is for every doubling of the polymer thickness, it doubles the breakthrough time. For every doubling of the temperature, it halves the breakthrough time.

Another method to reduce breakthrough is double gloving. This practice can further reduce breakthrough by routinely changing the outer glove before the manufacturer's stated breakthrough time. If double gloving, try to use two different colors of gloves. If the outer glove physically fails, such as a cut or puncture, the under glove should be visible.

### **Select a supported or unsupported glove.**

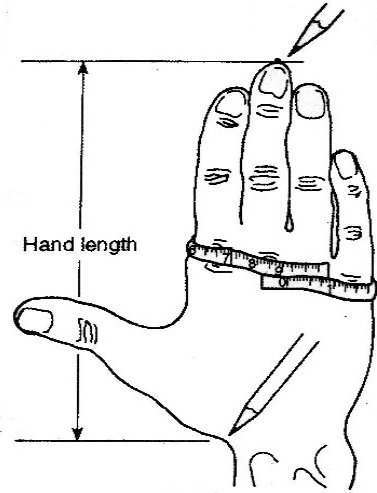
Supported gloves have a fabric lining which makes the glove easier to don and doff. Unsupported gloves provide greater manual dexterity and feeling for the work.

**Select the cuff design.**

Cuff designs are available in extended lengths to protect the lower forearm, such as the gauntlet. The safety cuff is a 2 to 4-inch wide stiff material, which is designed to make it easier to quickly remove the glove if it is caught on something. The slip-on design has no cuff. A glove with a knit-wrist cuff fits snug to the wrist to prevent chemicals/debris from entering the glove. Rolled cuffs are designed to prevent glove tear.

**Select the correct size.**

Glove sizing is indicated using either numerical hand sizes or qualitative size ratings, such as small, medium and large. Numerical hand sizes use the circumference of the hand at the widest area to specify glove sizes in inches. Manufacturers provide reference charts for their glove sizes.



Example:

Hand Size	6-7	7-8	8-9	9-10	10-11
Glove Size	XS	S	M	L	XL

Glove length is measured from the tip of the fingers. The length will increase with the glove size in some styles of gloves. For other styles, the length may be fixed or an option.

**Select the grip design.**

Grip design is the finish on the glove. Smooth finishes provide more sensation of touch while rough and crinkle finishes provide greater cut and abrasion protection and reduce slippage of objects held in the gloved hand.

**Storage of gloves.**

All gloves should be stored in a cool environment, shielded from ozone and ultraviolet (UV) light.

Keep in mind that no disposable glove will provide perfect protection. Employees should still work carefully and avoid contact with chemicals. If hazardous chemicals are spilled on disposable gloves, they should be discarded and replaced as soon as possible.

*References*

Chemical Protective Clothing, second edition AIHA Press, 2003.  
Occupational Health & Safety, September 2004.

[Return to EHS Newsletter](#)

# Safety Is An Attitude

University of Nebraska-Lincoln

Environmental Health and Safety

Fall 2004

## **Asbestos Frequently Asked Questions (FAQs)**

Environmental Health and Safety has posted Frequently Asked Questions (FAQs) regarding asbestos removal/abatement projects on campus to the web site at <http://ehs.unl.edu/Asbestos/FAQ.cfm>.

This information can help building occupants to become informed prior to commencement of construction projects in their area where there may be the removal of asbestos-containing materials. Regulations and procedures used during the abatement process vary depending on the material being removed and are briefly outlined in the FAQ document.

Further questions or concerns may be communicated directly to Facilities Management and Planning Help Desk (472-1550) or Environmental Health and Safety (472-4925).

[FAQ Brochure](#)

[Return to EHS Newsletter](#)

# Safety Is An Attitude

University of Nebraska-Lincoln

Environmental Health and Safety

Fall 2004

## Size Matters (in PPE)

Depending on the kind of work performed, an appropriate ensemble of Personal Protective Equipment (PPE) can be as simple as a sturdy pair of gloves or as complex as a sealed suit with a self-contained breathing apparatus. Choosing the right protective clothing and equipment is worth careful consideration, but finding the right fit is just as important.

Choosing PPE can be confusing. Understanding sizing conventions and determining the correct sizes can be challenging. Here are some simple guidelines to help you make the best decision when purchasing sized PPE.

### SHOES

Common PPE for the feet are overshoes and overboots. Overshoes are sized to fit over the shoes being worn underneath and correspond in size; a size 10 overshoe will fit over a size 10 shoe. Women's sizes are still uncommon in overshoes and overboots, but a workable rule of thumb is to simply add two sizes. For instance, a men's size 10 should correspond to a women's size 12.

### GLOVES

Tight-fitting gloves can cause fatigue and loose-fitting gloves can become a hazard. Gloves are sized by number (6, 7, 8, etc.) or using general size descriptors (Small, Medium, Large, etc.). Sizing can vary slightly among styles or manufacturers, but for a general idea of what number size will fit your hand, measure the circumference of your palm by wrapping a soft tape measure around your hand on a line from just below your pinky to just below the knuckle of the first finger ( [diagram](#) ). This will provide a size in inches equivalent to your glove size. An eight-inch measurement equals a size eight glove, and so on. Size Extra Small is roughly equivalent to a 6- to 7-inch palm circumference, Small to a 7- to 8-inch circumference, Medium to an 8- to 9-inch circumference, Large to a 9- to 10-inch circumference, and Extra Large to a 10- to 11-inch circumference.

### HARD HATS

Hard hat sizes can seem a bit mysterious. They do not correspond directly to head circumference. Use the following general guide for proper fit: size 6 fits a head with a 19-inch circumference; size 6-1/2 fits a 20-inch head; size 7 fits a 22-inch head; size 7-1/2 fits a 23-inch head; size 8 fits a 25-inch head.

### EYEWEAR

Safety eyewear size measurements depend on the type of lens. With a single-lens system, size is measured in millimeters (25.4mm equals an inch) from the outside of the left temple to the outside of the right temple. If the eyewear has a two-lens system, such as prescription eyewear, size is measured in millimeters from the left to right of each lens.

### RESPIRATORS

Of all PPE sizing challenges, accurate sizing for respirators is the most critical. Confusion can occur as respirator sizes are given descriptors (Small, Medium and Large), but these do not relate to any measurable value. Respirators are made with the assumption that most faces and heads have about the same width and length. This means that a Medium size will fit approximately 85 to 90 percent of the

population. People who need small or large sizes generally know from their experience buying hats or prescription eyewear that their face and head size falls outside the norm.

To view a selection of footwear, go to:

[http://www.labsafety.com/store/dept.asp?dept\\_id=60](http://www.labsafety.com/store/dept.asp?dept_id=60).

To view a selection of gloves, go to:

[http://www.labsafety.com/store/dept.asp?dept\\_id=61](http://www.labsafety.com/store/dept.asp?dept_id=61).

To view a selection of hard hats, go to:

[http://www.labsafety.com/store/dept.asp?dept\\_id=62](http://www.labsafety.com/store/dept.asp?dept_id=62).

To view a selection of eyewear, go to:

[http://www.labsafety.com/store/dept.asp?dept\\_id=57](http://www.labsafety.com/store/dept.asp?dept_id=57).

To view a selection of respirators, go to:

[http://www.labsafety.com/store/dept.asp?dept\\_id=64](http://www.labsafety.com/store/dept.asp?dept_id=64).

[Return to EHS Newsletter](#)

# Safety Is An Attitude

University of Nebraska-Lincoln

Environmental Health and Safety

Fall 2004

## Basic Radiation Safety Training Classes

The Radiation Safety Office will be offering regularly scheduled and one additional session of Basic Radiation Safety Training (Open-source and X-ray Users) in December. This will allow those with class and teaching conflicts to attend. The schedule is listed below and is posted on the [EHS Web site](#).

**Basic Radiation Safety Training:** Location – AgWh1 (EHS) Training Room

Open Source		X-ray Users	
December 7, 2004	1:00-5:00 p.m. Part 1	December 2, 2004	2:00-5:00 p.m.
December 14, 2004	1:00-5:00 p.m. Part 2	December 22, 2004	2:00-5:00 p.m.
December 20, 2004	1:00-5:00 p.m. Part 1	January 6, 2005	2:00-5:00 p.m.
December 21, 2004	1:00-5:00 p.m. Part 2		
January 4, 2005	1:00-5:00 p.m. Part 1		
January 11, 2005	1:00-5:00 p.m. Part 2		

**General Rule:** Open Source training is held on the first and second Tuesday of the month. X-ray User training is held on the first Thursday of the month. If a holiday or University shutdown occurs on a regularly scheduled class date, the class will be rescheduled for the following week.

Basic Radiation Safety Training for Open Source Users is given in two parts. There is the ability to stagger attendance if schedules require. You can attend Part 1 and attend Part 2 at a later time. You cannot attend Part 2 and then attend Part 1 (the exam is given during Part 2).

If you have any questions, please feel free to contact Tom Machacek, Radiation Safety Specialist/Instructor at 472-8676 or [tmachacek1@unl.edu](mailto:tmachacek1@unl.edu).

[Return to EHS Newsletter](#)

# Safety Is An Attitude

University of Nebraska-Lincoln

Environmental Health and Safety

Fall 2004

## News Briefs

### EHS Welcomes New Employees

#### Mark Clark

Mark Clark joined the EHS staff as a Special Waste Assistant in July 2004. Mark most recently worked as a Machinist at Walter Scott Engineering Center. He assists the campus with collection and disposal of aerosol cans, fluorescent light tubes, ballasts containing PCB's and other special and universal wastes. Mark can be reached at (402) 450-6079 or [mclark3@unl.edu](mailto:mclark3@unl.edu).



#### Sherry Savener

Sherry Savener joined the EHS staff as a Safety Specialist in September 2004. Sherry most recently worked as the EHS Coordinator for Eaton Corporation. She assists the campus with safety training, EHS newsletters, work area surveys, and coordination of unit safety committees. Sherry can be reached at (402) 472-5488 or [ssavener2@unl.edu](mailto:ssavener2@unl.edu).



---

### New Responsibilities

Lisa Tobiason, Safety Specialist, has taken on a new role in the EHS department effective July 2004. Lisa will be focusing on Asbestos, Lead, Excavation, Forklift Training, and Fall Protection Safety. Lisa has been with EHS since July 2002. Lisa can be reached at (402) 472-6513 or [ltobiason2@unl.edu](mailto:ltobiason2@unl.edu).

[Return to EHS Newsletter](#)

# Safety Is An Attitude

University of Nebraska-Lincoln

Environmental Health and Safety

Fall 2004

## New Documents

### Safe Operating Procedures (SOPs)

EHS has posted several *new* SOPs on the Web Site, including:

- Exposure Risk Assessments/Job Safety Assessments for Animal Users
- Import and Transfer of Etiologic Agents
- Limitations on Fuels For Permitted Combustion Sources at UNL - Air Emissions
- Management of Light Ballasts
- Power Generators - Emergency Generator Operations Log
- Power Generators - Non-Emergency Generator Operations Log
- Power Generators - UNL Generator List

EHS has *revised* several SOPs on the Web Site, including:

- Emergency Evacuation Planning
- General Safety Tips for Working with Teaching and Research Animals
- Hazardous Material Collection Procedures
- Personal Protective Equipment for Animal Users

SOPs can be found on the EHS Web Site at <http://ehs.unl.edu/SOP/index.cfm>

---

### New Program Document

EHS has posted the new UNL Power Generators program document on the web site at [http://ehs.unl.edu/ProgramDocuments/Power\\_Generators.pdf](http://ehs.unl.edu/ProgramDocuments/Power_Generators.pdf)

[Return to EHS Newsletter](#)

# Safety Is An Attitude

University of Nebraska-Lincoln

Environmental Health and Safety

Fall 2004

## Winter 2004-2005 Training Schedule

### Core Training\*

January 20 1:00 p.m. - 4:00 p.m.

### Forklift Training\*

Upon request - please call to schedule

### Radiation Safety Basic Training

November 2 and 9 1:00 - 5:00 p.m.

December 7 and 14 1:00 - 5:00 p.m.

December 20 and 21 1:00 - 5:00 p.m.

January 4 and 11 1:00 - 5:00 p.m.

February 1 and 8 1:00 - 5:00 p.m.

### X-Ray Safety Training

November 4 2:00 - 5:00 p.m.

December 2 2:00 - 5:00 p.m.

December 22 2:00 - 5:00 p.m.

January 6 2:00 - 5:00 p.m.

February 3 2:00 - 5:00 p.m.

### IATA/DOT Training\* (Shipment of Hazardous Materials/Dangerous Goods)

January 18 1:00 - 3:30 p.m.

### Supervisor Training\*

December 9 1:00 - 4:00 p.m.

### Fire Extinguisher Training

Upon request - please call to schedule



Check out our online training at  
<http://ehs.unl.edu/OnlineTraining/index.cfm>

**\*Registration is required.** To register, call EHS at 472-4925 or [email](#). Training site location: Environmental Health and Safety, 3630 East Campus Loop, Ag Warehouse 1, Lincoln, NE 68583-0824.

[Winter Training Schedule flyer](#)

[Return to EHS Newsletter](#)

# Safety Is An Attitude

University of Nebraska-Lincoln

Environmental Health and Safety

Fall 2004

## It Happens Here

Injuries caused by contact with chemicals can be prevented by selecting and using the correct type of glove when handling chemicals. The following cases demonstrate the importance of proper glove selection and use.

- An employee developed contact dermatitis on their hands after using cleaning chemicals. The employee was using disposable vinyl gloves.
- An employee developed contact dermatitis on the arms while cleaning walls and ceilings with chemicals.
- An employee developed a rash and numbness in their hands after wearing latex gloves for about three hours.

In the first case, the vinyl gloves used by the employee did not provide adequate protection to the chemicals used. Thus, the chemicals penetrated within a short time and caused the employee to develop a rash. By choosing the correct type of chemical protective gloves, workers can prevent injury caused by chemical breakthrough. See the featured article in this newsletter for more detail.

In the second case, the employee's arms were not adequately covered to protect against drips. This injury might have been prevented if the employee had used gloves with longer cuffs.

In the third case, the employee suffered an allergic reaction to the latex gloves. Latex gloves, which are common among health care workers and dining service workers, can cause allergic reactions in some individuals. According to OSHA estimates, eight to twelve percent of health care workers are latex sensitive. Latex gloves are manufactured from natural rubber derived from rubber trees. Several types of synthetic rubber are also referred to as "latex" but those materials do not cause allergic reactions.

Symptoms of latex allergy include skin redness, rash, hives, or itching. Although the first sign of latex allergy is rarely life-threatening, repeated exposure may cause more severe reactions to individuals with latex allergy. Use of other types of gloves such as vinyl or nitrile rather than latex is generally recommended.

[Return to EHS Newsletter](#)

# Safety Is An Attitude

University of Nebraska-Lincoln

Environmental Health and Safety

Fall 2004

## **Puzzler**

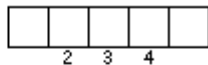
[Puzzler](#)

[Answer](#)

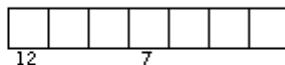
[Return to EHS Newsletter](#)

# Glove Safety

VEGLO



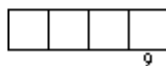
LIRTEIN



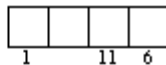
XELTA



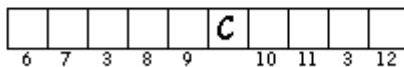
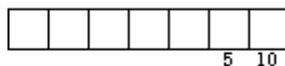
ZSEI



PIGR



LUTNEGA



# Glove Safety

VEGLO

G L O V E  
2 3 4

LIRTEIN

N I T R I L E  
12 7

XELTA

L A T E X  
8

ZSEI

S I Z E  
9

PIGR

G R I P  
1 11 6

LUTNEGA

G A U N L E T  
5 10

G L O V E  
1 2 3 4 5

P R O T E C T I O N  
6 7 8 9 10 11 12