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Department of Occupational and Environmental Safety NEWSLETTER

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CASE WESTERN RESERVE UNIVERSITY

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What WASTE!

Summer

Alas, this issue of DOES Newsletter marks the end of an editorial "era" for DOES. After nearly seven years of outstanding service, Carla Kungl, our Technical Writer, will be leaving to pursue her career in University teaching.

Carla will soon finish her dissertation, Women Writers and Detectives: Constructing Authority in British Women's Detective Fiction, and depart with dog in tow for the University of California at Santa Barbara. We are pleased that the technical writing skills Carla honed in our department will be put to good use in her new role teaching "Writing for Engineers" in UC Santa Barbara's Writing Program.

However, with Carla's departure, the Department loses the unique character of its newsletter, which bears the stamp of her continuous efforts to

Upcoming Training Sessions

Radiation (x2906)

- New Training:** Aug.25(1-4); Sept.8(9-12), 21(1-4)
- Retraining:** Aug.31(2-3); Sept.7(10-11), 17(2-3), 27(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:** (Service Building Conference Room) Aug. 26(10-11); Sept.3(2-3), 15(10-11)

Glove Compatibility: How to Choose the Right Glove

(continued from p.1)

Types of Gloves

Most gloves come in both single-use (“disposable”) and reusable forms. Reusable gloves offer more protection than disposables, so use a thicker gauge glove with more dangerous chemicals.

Most gloves are made from one of the following materials:

- **Latex (or natural rubber)**—Latex gloves are most common in disposable form, offering excellent conformity and dexterity. Therefore, they are good for sterile procedures or brief chemical jobs (when you only need gloves for a few minutes). Latex gloves are resistant to most acids and alkalis. Personnel with latex-related allergies should not use these gloves.

- **Neoprene**—Neoprene provides protection against a wide range of corrosive chemicals; it resists oils, greases, alcohols, resins, alkalis, and many solvents. It is poor for chlorinated aromatic solvents, phenols, and ketones.

- **Nitrile-Butadiene Rubber (NBR)**—NBR gloves are marketed as SOL-VEX or Nitrile. These gloves work well with aromatic petroleum and chlorinated solvents. They are resistant to cuts, snags and punctures and are good substitutes for latex gloves (if latex allergy is a concern).

- **Vinyl**—Vinyls are popular in both disposable (thinner, examination-type gloves that allows precision in movement) and reusable forms (made of polyvinylchloride, or PVC). The PVC glove is thicker and is necessary for use with corrosive materials.

Applying Definitions

When deciding what glove is best for use with different chemicals, compilers of glove compatibility charts rate the “penetration” of a chemical through a material. Penetration is defined one of two ways: “permeation” is the diffusion of a chemical on a molecular level through PPE, the results of which may or may not be visible to the naked eye;



HOT TIPS



X-Ray Surveys: Using Radiation- Producing Equipment

DOES will be conducting surveys and Ohio Department of Health (ODH) compliance reviews of all radiation-producing equipment (RPE) on campus starting in September. Equipment capable of producing x-rays such as x-ray diffractors, auger systems, electron microscopes, miscellaneous cabinet x-ray units, and particle accelerators fall under ODH rules and regulations.

During these surveys, DOES will monitor external radiation levels for each unit and assure that compliance issues concerning the use of RPE are being met. Two important compliance issues, training and proper postings, are explained in detail below.

Training

DOES will provide initial training when use with the machine begins. Users only need this general safety training once.

However, retraining must be provided ANNUALLY by the AU of those personnel who will use the equipment. Annual retraining should be machine-specific, explain-

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“degradation” is a change in the physical property of PPE based on adverse effects of a chemical, the results of which usually are visible to the naked eye.

“Breakthrough time” is the time it takes for a chemical to break through PPE until it can be detected by analytic instruments; this is often provided on glove compatibility charts for each chemical and each glove material, along with a “degradation rating” of Excellent, Good, Fair,

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Glove Compatibility: How to Choose the Right Glove

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or Poor. You can select the best glove for the job based on these parameters.

For example, on the Fisher Scientific glove chart, the breakthrough time of the chemical aniline through a 22 millimeter nitrile glove was 72 minutes; its degradation rating is thus given as "good" for use up to thirty minutes but only "fair" for use up to sixty minutes. On the other hand, when using aniline with a glove made from neoprene, there was very little breakthrough even after 8 hours; its degradation rating is given as "excellent."

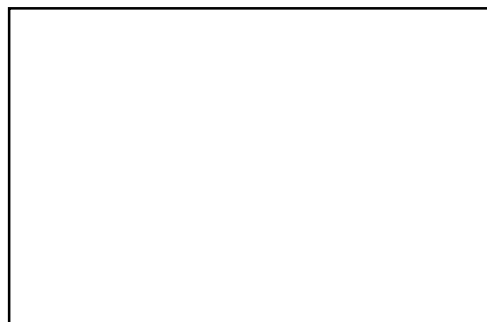


Figure 1. "Permeation" may or may not be visible to the naked eye.



Figure 2. "Degradation" often is visible to the naked eye.

Glove compatibility charts are available from most manufacturers of PPE. Often they are given in a company's catalogue, so you can check compatibility before you order. Appendix D of CWRU's Chemical Safety Manual has an abbreviated chart; and our website (<http://does.cwru.edu>) also offers links to various companies' glove compatibility charts.

Remember that basic glove charts only provide the briefest of guidelines about chemical penetration of a glove, and that penetration rates vary with the thickness of glove. If you have questions about what glove to use for a specific chemical, call a manufacturer or Safety Services (x2907).

TOP TEN Considerations for Selection of Gloves

- 1) All chemicals pass or permeate through protective barriers sooner or later. Remember, permeation can take place without any visible evidence of change in the material.
- 2) Even the best material will not perform properly if it is torn, cut or damaged. Inspect your gloves before and after each use, by inflation with either air or water.
- 3) A barrier may protect against one chemical very well, but perform very poorly against a mixture of chemicals. No glove protects against everything, so make sure to take into account chemical combinations.
- 4) Remember to wash your hands after removing gloves.
- 5) Generally, thicker is better—a thicker glove will increase the time to breakthrough, but the benefits may be offset by loss of dexterity. Double-gloving can increase thickness and provide desirable properties of different materials.
- 6) Gloves look alike! Do not depend on color or appearance alone since most gloves come in a variety of colors and forms. Make sure you have gloves of the right thickness, material, and compatibility.
- 7) After working with reusable gloves, decontaminate them thoroughly.
- 8) Recommendations for gloves are often given by their generic name—nitrile, neoprene—but manufacturers often have slightly different polymer formulations for each of these generic labels, providing different levels of resistance to chemicals. Check a manufacturer's chart of the glove you are using for the best information.
- 9) Check to see if there is any special storage or maintenance information to provide the best care for reusable gloves.
- 10) The best way to select the proper glove is to have it specifically tested under the work conditions and the chemicals being used.

X-Ray Surveys: Using Radiation- Producing Equipment

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ing startup and shutdown procedures, proper response to equipment malfunctions, standard operating procedures and any changes or special procedures since the worker has used the machine last.

Proof of retraining must be properly documented in the quarterly survey reports sent back to DOES. In addition to writing in the date a worker has been retrained on the survey report, the AU should send us a copy of the sign-in sheet for the retraining and an outline of the items covered during retraining.

The AU must also retain copies of the sign-in sheet and retraining materials so that they can be accessed if necessary by DOES or by ODH inspectors.

Note that this training is for RPE users only and does not meet training requirements for use of radioactive materials.

Postings

There has been one important change in posting regulations concerning machines that are no longer in use—machines which are disabled or are in storage. In addition to being locked out (either at the main switch or at the plug), these machines must now be tagged with some sort of notice (see sample below). We can bring a “Notice” posting to you or you can make one yourself—there is no set wording requirement as long as it is clear that the machine cannot be moved or used without clearance from Radiation Safety.

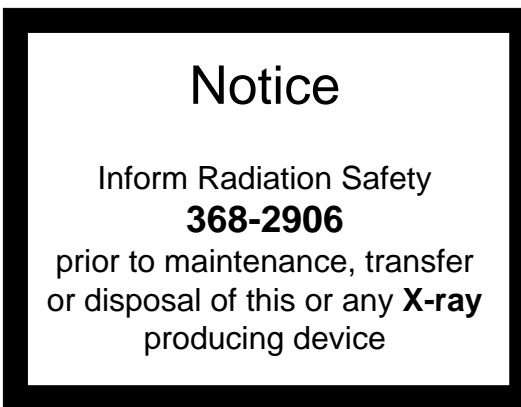
Please call us for assistance with the lockout/tagout procedure so that we can bring you the the



proper materials, including a Posting Notice if you wish.

Other warnings that must be posted in the areas surrounding RPE include:

- 1) ODH Notice to Employees
- 2) ODH Radiation Protection Rules
- 3) warning signs and labels (available from DOES)
- 4) machine-specific operating procedures
- 5) if the machine is not in use, a “Notice” similar to the sample below.



Example of new sticker which must be posted on an RPE if the machine is no longer in use.

Specific compliance requirements for different types of RPE, in addition to these general requirements, are also required. Requirements for the four types of RPE—dental, veterinary, fluoroscopic, and radiographic equipment (including electron microscopes)—will be explained to users of equipment during compliance reviews.

Call Yelena Tigay at the Radiation Safety Office (x2906) for initial training or if you have any other questions concerning Radiation-Producing Equipment. Also, please notify us if you have equipment which may fall under ODH regulations that has not already been checked by our department.

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