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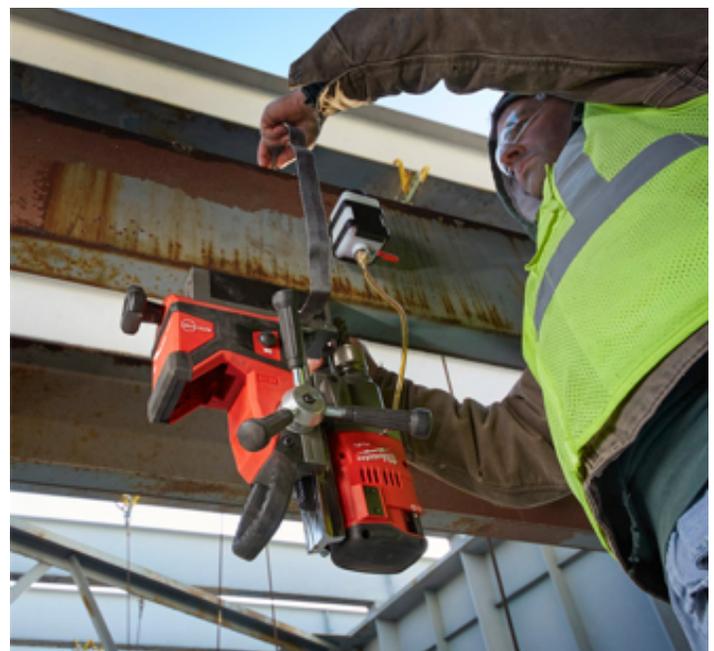
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PPPL Lessons Learned – Use Safety Strap with Electromagnetic Drills

By Julia Toth

A few months ago an injury occurred at PPPL that involved a Milwaukee electromagnetic drill press. Various departments use this tool because it is a great asset for drilling tough surfaces or for drilling in remote locations. The magnetic base allows the weight of the tool to be held onto the surface to be drilled without additional user support. As such, the drill can be positioned overhead or on vertical or horizontal surfaces.

While fairly easy to use, the drill can harm a worker when not used correctly. This was seen during the recent incident in which the drill became demagnetized during use on a vertical surface and violently whipped around causing the housing portion of the drill to come in contact with a worker's forearm. Keep in mind that the drill weighs 26.5 pounds and has a speed of 450 RPM. (At 1 foot away that would be approximately 100 pounds of force upon the surface with which it comes in contact).



A safety strap is required when drilling on a vertical or overhead surface.



It is important to remember to read the manufacturer's instructions and safety precautions. For this particular drill, the safety instructions are clear: When drilling on a vertical or overhead surface the drill must

be tied down with a safety strap. This must be done because the drill may become demagnetized in either of these positions.

A Milwaukee customer support advisor was contacted to determine why the drill might have become demagnetized. Three possible causes were indicated: 1. When power was interrupted the base lost its magnetism; 2. The drill point pressure may have caused the drill's base to lift up from the metal if too much pressure was applied while drilling; and 3. The magnet would not have the full holding capacity to keep it in place if the metal was not at least 3/8" thick.

No matter how this drill demagnetized, the way to prevent a similar injury is to follow the manufacturer's recommendations and use the safety strap to secure the drill during use. ■

Electrical Equipment Approval Procedure ENG-023 Simplifies Inspection Process

By Glenn Anderson

ENG-023, the electrical equipment approval procedure has recently been revised to simplify the inspection process. It applies to all PPPL electrical equipment rated 50 volts or higher and 1000 watts or higher, including lab-built equipment. Purchased electrical equipment that has a Nationally Recognized Testing Laboratory (NRTL) label such as UL, CSA, ETL, and TUV are exempt from this procedure. Unlabeled equipment must be inspected and approved by the Electrical Equipment Inspector (EEI) (Glenn Anderson), who was appointed by John Lacenere, the head of AC Power, who is designated the authority having jurisdiction (AHJ) - electrical.

Custom-made equipment or related installations that are designed, fabricated, and intended for use within the Lab must be made available for inspection and approval by the EEI.

NRTL equipment that has been modified or is used outside manufacturers' specifications must be re-inspected as per procedure ENG-023.

PPPL system engineers and cognizant individuals serve as points of contact for the AHJ and EEI for electrical equipment and installations under this procedure.



Legacy equipment out of service must be inspected before use.

For questions, comments, or to schedule an inspection, please contact Glenn Anderson at ganderson@pppl.gov. Procedure ENG-023 can be found at <http://bp.pppl.gov/procedures/eng023.pdf>. ■

TAGS ON ELECTRICAL / ELECTRONIC EQUIPMENT

What do they mean?

ACCEPTED. This component has been inspected, approved, and is in compliance with the National Electric Code, NFPA 70 and the Standard for Electrical Safety in the Workplace, NFPA 70E and OSHA.

NRTL LISTED. This component has been tested by a Nationally Recognized Testing Laboratory (UL, CSA, TUV, etc.) and has been listed, labeled and approved for use. No further inspection is required unless the component has been altered or used other than intended as per the manufacturer's instructions.

REJECTED. This component has been inspected and found to be out of compliance with codes, standards or manufacturer's instructions. The inspector will provide a list of discrepancies to be repaired or replaced.

OUT OF SERVICE. This component is abandoned in place or mothballed for future use and shall not require inspections until reactivation.

RACK INSPECTED. This equipment rack (only) has been inspected and found to be in compliance with applicable codes and standards.

Personal Protective Equipment Training Updated

By Julia Toth

The Safety Department has updated the personal protective equipment (PPE) training required for all employees who wear PPE such as a hard hat, gloves, safety glasses, etc. The training can be accessed through the [PPPL training website](#) and is currently a one-time-only training course. For those who have taken the live class previously, the online course is recommended as a refresher.

The updated PPE training is filled with detailed information regarding required protection for your head, face, ears, lungs, hands, feet, and body. The training includes facts, pictures, and videos about each topic followed by a short quiz to test your knowledge.

The training will help you to understand when PPE is necessary, recognize which PPE is appropriate, know how to don, doff, adjust, and wear PPE, as well as how to care for, maintain, and inspect the PPE that you choose. PPE selection should occur after you have determined your workplace hazards, which may exist in many different forms. This is especially useful when filling out a job hazard analysis or performing a pre-job brief.

Safety doesn't happen by accident so remember to wear your PPE! ■

Personal Protective Equipment (PPE)

Please follow these steps:

1. **CLICK** > the **PLAY** button to advance and follow on-screen instructions.
2. **REVIEW** > the material at your own pace. **There is no narration.**
3. **COMPLETE** > the **THE TEST** and submit it to the office of Human Resources.

Suggested Browsers: For best results use Safari, Internet Explorer, or Google Chrome.

Safety Contest

If you can compose,
The winning safety haiku,
You will win a prize!

Compose an original safety haiku! (A haiku is a three-line poem. The first line has five syllables, the second line has seven syllables, and the third line has five syllables.) [You can find some examples here.](#) Submit your haiku to dstrauss@pppl.gov by **Friday, August 19**. The winner as determined by the Safety Division will

be entered into a drawing for a \$20 gift certificate to the PPPL Plasma Hutch. Preference will be given to haiku featuring PPPL-centric themes. Multiple entries accepted. Safety Division members are not eligible.

Congratulations to Marc Sibilia, who won the spring 2016 ES&H Newsletter contest! ■

Quarterly SOS Box Contest

Everyone who submits a valid actionable safety post (specific enough to fix, with the submitter's name included) between July and September 2016 to ES&H via [the SOS Box](#) will be entered into a drawing for a chance to win a \$20 gift certificate to the Plasma Hutch! ■



New! NEPA Database Available

By Dorothy Strauss

If you need to access a certified National Environmental Policy Act (NEPA) document or want to know the status of a submitted form, look no further than the new NEPA database. Available from the ES&H website (or directly at <https://fmp-srv.pppl.gov/fmi/web-d#NEPA%20Database>), the database makes it easy to see the proposed action, its status, its certification date if complete, and a description of the activity. Users can view NEPA packages online or export them as PDFs. In some cases, additional documentation (schematics, etc.) may be available. If you would like to view the

hard copy of a particular NEPA, please contact Dorothy Strauss or Jerry Levine. Over 1,600 NEPAs have been processed since the program's inception in the early 1990's but finding the NEPA you need is easy with the database's search feature. The database replaces the Excel spreadsheets previously posted on the ES&H website and does not require a log-in.

Note: The database should not be used to self-assign numbers when submitting a new NEPA form. ES&H staff will assign NEPA numbers. ■

NEPA #	Proposed Action	Date Received	Date Sent to DOE	Status	Certification Status	Description	Document
1607	Rent Two Trailer Complexes to House ~100 Staff During Facility Refurbishments	6/5/16	6/8/16 (CX; not submitted to POS)	Covered under Routine Maint CX	NEPA Certification: 6/8/16	The laboratory would contract for rental, installation, and, at end of contract, disassembly and removal of two trailer complexes of approximately seven trailers each to house PPPL staff for approximately eighteen months during renovation of various office areas (e.g., as part of IOI project; see NEPA # 1568). The contract may include an additional...	Export PDF View Online
1606	Neutral Beam Helium Refrigerator Upgrade	6/3/16	6/8/16 (CX; not submitted to POS)	Covered under Routine Maint CX	NEPA Certification: 6/8/16	This project would involve the design and installation of a new helium refrigerator to support Neutral Beam and NSTX cryo diverter operations. A cryo cold box would be added to the compressor room mezzanine with the associated main dewar. A dewar (beam line dewar type) would be installed in the NSTX-U test cell. Piping would be installed in the cryo...	Export PDF View Online
1605	ITER CIXS X-Ray Detector Magnetic Field Test	6/1/16	6/1/16 (CX; not submitted to POS)	Covered under Routine Research CX	NEPA Certification: 6/1/16	The X-ray detector magnetic field test would involve placing a detector in a high magnet field. Energy use would be required to power the electromagnet in the way of the D-Site dummy load located in the FCPC Building. The area would be safed and no personnel would be allowed to access the area while the experiment is running. A physical wall...	Export PDF View Online

STOP Program & Stop-Work Authority: What's the Difference?

By Dorothy Strauss

While both the Safety Training Observation Program (STOP) and stop-work authority seek to prevent injuries and illness, they are not the same. See the following comparison.

	STOP PROGRAM	STOP-WORK AUTHORITY
WHAT IS IT?	A behavior-based safety program in which work activities are observed and discussed to reinforce safe practices and determine the reasons behind unsafe practices.	The right and responsibility to halt work if an imminent danger is detected.
WHO CAN USE IT?	Trained individuals with training available to everyone.	Everyone.
HOW DO I DO IT?	Observe individuals while they are working. Note what they are doing well or where improvements can be made. Talk with the workers about what you saw. Submit a STOP card.	If you believe you see an imminent danger, raise the concern to the workers involved. If your concern is not or cannot be resolved, indicate you are stopping work. Advise the RLM and ES&H dept. head.
WHAT IS THE PURPOSE?	The STOP Program seeks to prevent incidents by identifying trends in behavior and removing barriers to safe work. A primary tenet of the program is reinforcement of desired behavior.	Stop-work authority empowers any and every person at PPPL to halt activities that may result in danger to people, equipment, or the environment.
WHAT IF I'M INVOLVED?	Continue working as usual. If you're at a critical juncture, politely advise the observer that you can't talk just then.	Everyone involved must comply immediately with a stop-work request no matter who issues it. If possible, any equipment/hardware should be shut down safely.
CAN I USE STOP-WORK AUTHORITY DURING A STOP PROGRAM OBSERVATION?	Yes. If you see a danger, you must speak up. Use of your stop-work authority takes precedence over conducting a STOP observation. If you would like to report what you observed through the STOP program, you may do so but only after following stop-work protocols.	
CAN I USE THE STOP PROGRAM INSTEAD OF STOP-WORK AUTHORITY?	No. If you see a danger, you must report it immediately in person or via phone or radio.	
WHERE CAN I GET MORE INFORMATION?	http://www-local.pppl.gov/esh/STOP%20Home.htm	http://bp.pppl.gov/policy/p012.pdf

Don't Use Radioactive Material Bags for Other Purposes

By Jerry Levine

While compacting material from a drum containing non-radioactive waste solvent rags recently, Environmental Services Division (ESD) technicians found a yellow radioactive material bag that contained latex gloves and rags. They immediately stopped the activity and contacted their supervisor and Health Physics (HP). (The on-duty facility manager was also contacted). HP smeared the bag and its contents, the drum and rags near the bag, and the gloves used by the ESD technicians and all came up clean (non-radioactive). HP also surveyed the contents of the bag for activation to ensure no activated material had been wiped up with the rags. That survey also came up clean. The investigators concluded that the radioactive material bag had mistakenly been used to collect non-radioactive wastes.

Please remember that the yellow radioactive material bags are only to be used to collect radioactive material and should not be used for other purposes. ■



Several Safety Initiatives Move Forward Thanks to Temporary Staff Member

By Dorothy Strauss



M. Spadaro

Safety data is only useful if it's current and accessible. Meeting those standards has long been a goal of the Safety Division for several of its programs. However, meeting the needs of a dynamic, expanding workforce kept the Safety Division's staff of five too

busy to tackle the data management needed to bring these projects to fruition. Then Meryl Spadaro joined the team in November 2015 on a temporary, part-time basis as she pursues a degree in communications from Rowan University.

Meryl's impact was immediate. She populated a database with lessons learned information from the year 2000 forward. [This database](#) is now available to the entire staff and provides users with easy access

to events reported by PPPL and other laboratories in the DOE complex, actions assigned to PPPL staff, and supporting documentation.

Meryl also updated Safety's industrial hygiene sampling database, which houses the results of noise dosimetry, air sampling, employee exposures, and qualitative surveys that determine if further monitoring is required to ascertain exposure to physical and health-related hazards. Meryl supplemented the database with approximately 1,500 records dating back to 1987. This historical information allows us to compare previous years with present-day activities as well as to obtain information on previous potential exposures to current and former employees.

The newly-released [NEPA database](#) would also not have been possible without Meryl's efforts. More than 1,600 National Environmental Policy Act forms and related documents have been scanned and paired with project descriptions, log numbers, certification

status, and other pertinent details. Lab-wide access to this data allows project initiators and managers to quickly and easily access information such as project scope.

Per OSHA requirements, the ES&H Department maintains safety data sheets (SDS) for every chemical brought on site in both [an all-access database](#) and hard copies, a library that currently contains more than 7,000 SDSs. This information is available 24-7 in case it is needed in the event of a fire, an injury, or illness. As formulations change and manufacturers come and go, SDSs can quickly become dated. Meryl has been targeting old and obsolete SDSs and replacing them, where possible, with the newest versions. This will provide users with the most up-to-date information pertaining to chemical-related hazards, handling, and storage.

Meryl will next assist us in compiling management safety walk-through (MSW) data in a new database that will be made available to all staff, likely by late summer. Currently, action items reside in a private database while other MSW data, like area grades and participation, are maintained separately. Meryl will combine all of this information so users can search for their action items, as well as see area-specific information going back more than a decade, and more with the click of a button.

The ES&H Department is pleased to improve our record keeping to better serve the Laboratory population and to bring our fellow PPPL'ers better, more convenient ways to access the information they need to work safely. This could not have been achieved without significant, accurate data management. Thank you, Meryl! ■

Know the Rules of the PPPL Roads

By the ES&H Department
and Site Protection Division

Warmer weather means increased foot and bicycle traffic. Blind curves and the lack of sidewalks on the C- and D-Site loops require extra caution from all who travel on site.



PPPL's Transportation Hierarchy

PEDESTRIANS:

- Enter through Booth 6. Do not skirt the gates by entering the site through the woods.
- Use sidewalks where available. Otherwise, walk facing traffic so you can see approaching vehicles.
- Cross the street using marked pedestrian crosswalks. If crosswalks are unavailable, look carefully in both directions before proceeding.

- Dress to be seen.
- Don't look down at your cell phone or other mobile devices while walking.

WORKERS:

- If you're going to be spending time working on or near a roadway, it's a good practice to wear a high-visibility or reflective vest. If you don't have one, you can borrow one from Site Protection.

BICYCLISTS:

- You must wear a helmet on-site and on the access road leading to PPPL.
- Ride in the same direction as the flow of traffic.
- Use proper hand signals when stopping, turning, or changing lanes.
- Bike racks are provided near the lower parking lot. Bikes are not permitted in buildings.

DRIVERS:

- Motor vehicle operators must share the road. Treat cyclists as you would treat other drivers.
- Unless otherwise posted, the speed limit on site is 15 mph.

- Yield to pedestrians, bicyclists, and emergency vehicles with flashing lights.
- Seatbelt use is required.
- Smoking is prohibited in government vehicles.
- Hand-held cell phones and texting are prohibited while driving.

- **Report all accidents immediately to Site Protection (x3333)!**

Please do your part to keep all commuters safe by walking, biking, and driving responsibly. As always, if you see something unsafe or suspicious in your travels, please report it to Site Protection immediately (x2536).

For more information, see [PPPL's Parking, Traffic, & Bicycle Regulations](#). ■

Protect Yourself from Lightning

By Glenn Anderson

The National Weather Service (NWS) states that lightning strikes the United States about 25 million times each year. While lightning mostly occurs during the summer, it can happen at any time of the year. Talk with your family about staying safe during thunderstorms. Here are just a few [lightning safety tips](#) that the NWS offers if you are indoors:

- Stay off corded phones. You can use cellular or cordless phones.
- Don't touch electrical equipment such as computers, TVs, or cords. You can use the remote control safely.
- Stay away from windows and doors that might have small leaks around the sides to let in lightning, and stay off porches.

The NWS warns that if you are outside during a storm it is important to get inside a safe building or vehicle. You are NOT safe outdoors. However, if you absolutely cannot get to safety, [follow these tips](#) to slightly reduce the threat of being struck by lightning:

- Avoid open fields, the top of a hill, or a ridge top.
- Stay away from tall, isolated trees or other tall objects. If you're in a forest, stay near a lower stand of trees.
- If you're in a group, spread out to avoid the current traveling between group members. ■

Lessons Learned

By Jerry Levine (Based on DOE Lessons Learned Database)

RECOGNIZING AND RESPONDING TO CHANGED CONDITIONS - ROLL-UP DOOR FALLS DURING MAINTENANCE WORK AT ANOTHER DOE LAB

LESSONS LEARNED STATEMENT:

Personnel working on a roll-up door recognized the remote possibility that the door could fall as part of the planned work. In response, they cordoned off an appropriate workspace for safety. However, conditions changed when the door jammed.

The potential hazard of the door falling remained. However, the probability that the door would fall once unjammed went from a remote chance to almost 100

percent. The probability that the door would be damaged and could be severely damaged also increased significantly because the door would fall from 10 feet above floor level.

DISCUSSION:

After replacing a roll-up door motor, the work crew began setting the limits for the fully-open and fully-closed positions. This motor's original fully-open limit was set too high, which caused the bottom rail of the door to jam on the stops. The door then became stuck at a height more than 10 feet above the floor, introducing a changed condition. The moment the



Figure 1: Door and visible components of drive mechanism.



Figure 2: Roll-up door after uncontrolled fall to the floor.

work crew unjammed the door, it fell to the floor in an uncontrolled manner.

Fortunately, the work crew had identified the remote possibility of the door falling as part of the original scope. They followed their safety protocols and cordoned off the work area to prevent personnel not involved in this work from entering. Other personnel observed the work area markings and kept away from the work location. The work crew avoided potential injury by not staying under the door while correcting the jam.

ANALYSIS:

The door fell because the counterbalance assembly (springs) failed due to fatigue and/or inadequate tension and the key stock in the keyway sheared (possibly when the door jammed) where the drive shaft of the door and sprocket join. There was inadequate support for the door's weight when the jam was removed and nothing was placed in its path to prevent this fall.

1. Failed door hardware. An inspection of the springs and drive mechanism revealed the conditions described below. The springs were encased in a barrel and never visible during motor replacement or door operation. The drive mechanism hardware was visible during motor replacement and subsequent door operation.
 - The motor shifted out of position when the door jammed.
 - The drive chain became loose from the door drive shaft sprocket and the motor drive sprocket when the motor shifted.
 - The key stock on the door drive shaft and sprocket sheared. This means that even if the chain were fully engaged with the sprocket, there was no connection to the motor.
2. Changed conditions were not adequately recognized and addressed. A performance anomaly

or malfunction (the door jamming) signals a changed condition. A changed condition indicates the need for potential additions to the hazards identified before the work started. A changed condition also indicates a potential increase in the probability that one or more of the identified or new hazards will be realized.

When a condition changes, it is prudent to pause/stop work, identify and analyze the hazards presented by the changed condition(s), and implement appropriate controls before proceeding with the work.

Note that the hazard itself, the door falling, was recognized and remained the same. However, the increased probability that the door could fall and/or the increased probability that the door could fall in an uncontrolled manner was not recognized.

3. Blocking or clamping was not used. At more than 10 feet above the floor, the door presented a falling object hazard with considerable potential energy. While personnel and property outside the exclusion area were adequately protected from the falling door, the door and its hardware were not protected from potential damage.

RECOMMENDATIONS:

Recognize performance anomalies and malfunctions for any work as signs of a changed condition that merits a response:

1. Stop/pause work;
2. Bring the device or system to a safe configuration;
3. Assess for causes and potential hazards; and
4. Eliminate/mitigate the hazard(s) through implementation of appropriate work controls (e.g., in this case, block, clamp or otherwise support the roll-up doors to prevent them from falling). ■

Coming in July!

The next quarterly safety culture survey will be conducted in late July. If you receive an invitation to participate this quarter, please take 5-10 minutes to complete the survey! Your feedback directs effort and resources to improve safety at PPPL. Thank you!

Contact Information for Safety Concerns, Questions, Ideas

Notify your supervisor (or HR if chain-of-command is a concern)

SOS Box – can be anonymous if you prefer. If you include your name, we will respond to you directly as well as on the website.

Safety@pppl.gov

[Director's Suggestion Box](#)

SAFETY DIVISION

Industrial Hygiene, Lessons Learned, Confined Space

Permits: Neil Gerrish (x2531)

Industrial Safety, Ergonomic Evaluations, Fall Protection,

Noise: Julia Toth (x2832)

Construction Safety: Ify Iwuoha (x3383)

Laser Safety, Scaffolding, Chemical and Safety Purchase

Approvals: Bill Slavin (x2533)

Electrical Safety: Glenn Anderson (x3740)

ENVIRONMENTAL SERVICES DIVISION

Spills should be reported to ESU at x3333

Spill Prevention: Maria Pueyo (x2213)

Hazardous/Chemical Waste: Maria Pueyo (x2213)

Radioactive Waste: Keith Rule (x2329)

Recycling: Margaret King (x3652) (Scrap metal & electronics are processed by Material Services.)

Environmental Permits: Virginia Finley (x2746)

Green Purchasing: Leanna Meyer (x2599)

HEALTH PHYSICS DIVISION

Nuclear Materials: George Ascione (x2513)

Dosimetry: Cathy Saville (x2528)

PEARL Operations: Patti Bruno (x3393)

Healthy Physics Technician Assistance: Patti Bruno (x3393)

MATERIAL SERVICES DIVISION

Offsite Shipments & Export Control: Jason Wohlberg (x3572)

Receiving In-Bound Equipment, Materials & Supplies: Margaret Carpe (x3568)

Mail & Package Distribution & Receiving: Jay Rodriguez (x2532)

Furniture/Warehouse Services/Storage and Distribution & Receiving: Pattie Potts (x2328)

Fleet Management/Dispatch and Mobile Equipment Repairs: Adam Salmon (x2716)

Office Supplies/Safety Shoes/Stockroom, Supplies & Contracts, & Spares Operations: Jim Conover (x3573) or Marisol Ovalles (x2714)

Property Administration/U.S. Gov't Personal Property Tracking and Control: Shanda Carmichael (x2567)

Excess Property Recycling & Disposal & Pick-ups: Kyron Jones (x3326)

Property Loans and Collaborations (domestic and international): Barbara Mooring (x2724) or Fran Cargill (x3396)

GENERAL

NEPA, MSWs: Dorothy Strauss (x3072) or Jerry Levine (x3439)

Safety Culture Surveys: Dorothy Strauss (x3072)

Safety Analysis: Jerry Levine (x3439)

FIND WHAT YOU NEED
IN PLAIN LANGUAGE:

[Safety Information Brochure](#)



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