TOOLBOXTALK

THE ENERGY WHEEL

Every task we perform involves energy, and when that energy is released or reaches someone in a way we did not intend, people get hurt. Gravity pulls a worker from an elevation or sends material to the ground. Electricity passes through the body. Pressure releases from a hose or hydraulic system. Chemicals can burn the skin or damage the eyes. These incidents look very different, but they have something in common: energy reached a person. The Energy Wheel gives us a practical way to look for that energy before something goes wrong. Instead of identifying only the hazards that immediately catch our attention, we consider the different types of energy present and what could happen if we lose control of them.

LOOK FOR ALL THE ENERGY

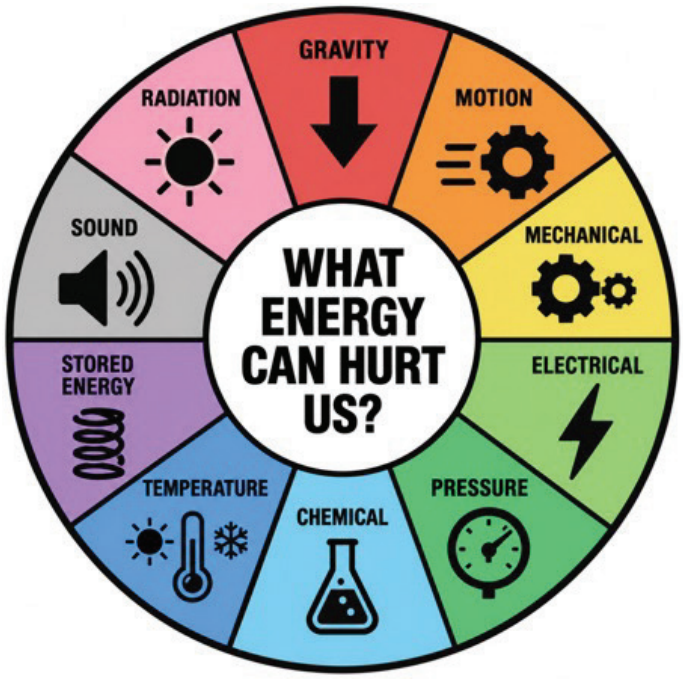
Most jobs involve more than one type of energy. Before starting work, consider each type that may be present:

- Gravity: workers at elevation, dropped tools, loose material, suspended or elevated materials
- Motion: vehicles, MEWPs, grinders, saws, rotating equipment, swinging or shifting objects
- Mechanical: blades, gears, pinch points, springs and moving equipment components
- Electrical: power tools, temporary power, damaged cords, generators and overhead power lines
- Pressure: pressure washers, pneumatic tools, compressed air, hydraulic systems and water lines
- Chemical: coatings, primers, sealants, solvents, cleaners, epoxies, concrete and cement products
- Temperature: hot equipment and materials, extreme heat, cold surfaces and weather
- Stored energy: tensioned or compressed components, raised equipment, hydraulic pressure, etc.
- Sound: grinders, chipping equipment, saws, generators and other high noise work
- Radiation: sunlight, welding, lasers and radiofrequency sources

You do not need to memorize the wheel. Its value is keeping us from stopping after we recognize the first obvious hazard. A worker using a MEWP may be exposed to gravity, movement, hydraulic pressure, electricity and stored energy. Recognizing the fall hazard does not mean we have identified everything that can hurt us.

ENERGY DOES NOT HAVE TO BE MOVING

Some hazardous energy is easy to miss because nothing is happening yet. A pressurized hose looks harmless until a connection fails. A tensioned line looks harmless until it releases. Hydraulic equipment may remain under pressure after it stops moving. Loose concrete may remain attached to a building until vibration or removal work causes it to fall. Before assuming something is safe, consider what happens if it breaks, disconnects, shifts, releases, starts moving or falls.



KEEP THE ENERGY AWAY FROM PEOPLE

After identifying the energy, determine what keeps it from reaching you or someone else. That may mean shutting equipment down, releasing pressure, securing material, installing a guard or barricade, maintaining distance, using fall protection, or keeping people out of the area where the energy could be released. Keep watching the job as work progresses. Moving equipment, changing elevation, removing material, increasing pressure, or changing the work method can introduce new energy or change where existing energy can go. When the work changes, look at the Energy Wheel again.

DO

- Look for more than the most obvious hazard.
- Consider energy that is stored or under pressure.
- Keep people away from where energy could be released.
- Check again when the work or conditions change.

DON'T

- Assume something is safe because it is not moving.
- Assume one task has only one type of energy.
- Put your body where released energy could travel.
- Continue when hazardous energy is not controlled.

REVIEW QUESTIONS

1. What is the Energy Wheel used for?

   a) Identify hazardous energy

2. What types of energy do we regularly encounter in our work?

   a) Gravity, motion, mechanical, electrical, pressure, chemical, temperature, stored, sound, radiation

3. Give an example of hazardous energy that may not be moving.

   a) Pressurized hose; tensioned line

4. Why should we use the Energy Wheel again when the work changes?

   a) New or changed energy hazards

References: CPWR – The Center for Construction Research and Training, *Energy Wheel: Hazard Identification Tool*; NIOSH, *Prevention through Design*; OSHA, *Control of Hazardous Energy (Lockout/Tagout),* 29 CFR 1910.147.

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