Chapter 9

Safety and Safety Equipment

At one time, my duties included acting as a safety manager for an organization with 50 employees. This was in addition to other duties but it still took half my time for a year and a half. Specialized training was provided by my organization, and I was required to write a comprehensive Facility Safety Plan. Because of this experience, I am very aware of what can happen to people, and how suddenly it can happen. I was the guy who had to investigate these incidents and write the accident reports. This is a subject which I have very strong opinions about, especially given the number of times I was injured while working on my own houses.

General Guidelines

Safety is a mental attitude that says you choose not to be a victim. More than anything else it is a matter of self-respect. You must learn to listen to your inner voice. When you feel uncomfortable with a situation and feel at risk your common sense is sending you a message. When that happens, STOP what you are doing. STOP IMMEDIATELY, RIGHT NOW. JUST STOP! Then evaluate how you were attempting to perform the task and find a way to eliminate the safety problem before resuming work.

As a guideline, you should never work if you are ill, upset, seriously injured, or excessively tired. You are simply asking for trouble. Because you're doing a remodeling job, you're doing it on your own time and not someone else's, so you can choose when to work, or not work.

Accepting the hazards of a project means you are prepared for them. Using safety equipment is like driving a car. It is too late to reach for a seat belt while crashing into a tree.

Many people suffer from denial, and believe that accidents happen to someone else. Eventually that someone else will be you. If you are remodeling a home,

you are doing construction work. I can assure you that if you work on your house long enough, eventually an injury-causing situation will happen. This is not a question of if, but when. It will happen eventually. You can count on it. Proper safety equipment will turn a hazardous situation into a scary one -- but nothing more.

Proper safety equipment should never be optional. I used a hard hat, safety glasses and full face shield, chemical-resistant gloves, back braces, hearing protection, and steel toe safety shoes while working on home remodeling projects. Every piece of my safety equipment has saved me from serious injury at least once.

Always, always, be sure to get enough sleep. People do stupid things when they are tired. Occupational Safety and Health Administration statistics show that people have a much greater tendency to get hurt the last two hours of an eight-hour shift, and this is because of fatigue. There is an even more serious problem when working overtime. Since you will usually be remodeling your house during nights and weekends, you are essentially doing the remodeling while working overtime. Pay attention to your fatigue level and stop before you become exhausted.

Always work at a workman-like pace, which means working in a steady and deliberate way. Attempting to sustain a rapid pace not only increases fatigue, but it is dangerous. An added benefit of a deliberate working style is a tendency to make fewer dumb mistakes. Why? Your mind has more time to process information if your pace is a little slower.

It is useful to spread tiring tasks out when possible. One approach is to alternate between working at a very tiring task and something else that is less physical. Because you are not working for someone else, you can make a decision to perform a task in a more pleasant and less tiring way, and no one can question your decision. The only important thing is how much gets done, and you are the judge of your own accomplishments.

Situational Awareness

Personal safety can be greatly enhanced simply by being aware of what is going on around you.

As an example, one simple rule is to keep all parts of the body away from an imaginary line drawn through a spinning blade. This is sometimes referred to as the line of cut. If a small portion of a work piece breaks off unexpectedly, the blade will throw it toward the front of the blade where you are standing. I had this happen using a table saw to cut a thin strip from a piece of plywood. There was a large void inside the plywood which weakened it. The vibration from the table saw blade caused a small piece to fly past my right shoulder, and bounce off the basement wall behind me. Because I never stand in the line of cut, I was startled but unhurt.

OSHA 10 Hour Training

If at all possible, take a formal safety course. The Occupational Safety and Health Administration has created a structured 10-hour safety course for construction workers which I highly recommend. The class involves a little bit of lecture and a lot of movies, and there is no real test involved. (There is a self-assessment after every chapter which is not graded.) If you really want to understand how to avoid the hazards of remodeling, take this class. They are taught by certified instructors, but they are not offered directly by OSHA. Call your local OSHA office to learn about classes offered in your area. Another approach is to call a local community college or a high school with an adult education program.

Specific Guidelines

Ears

The problem with hearing loss is it occurs slowly, but once it exists, it cannot be reversed. It is usually the cumulative result of many noisy situations rather than one dramatic event. Indeed, hearing loss is similar to heart trouble that is caused

by poor diet and lack of exercise. Both progress as a result of a lack of awareness or abuse. As those personal habits continue, a point is reached where the problem is so serious it can no longer be denied or ignored. The problem has become so serious it is too late to avoid it.

Hearing protection comes in a number of forms. The type of protection selected is a matter of personal comfort and the specifics of the situation. Plugs, bands, and muffs are all available, and everyone seems to have a personal preference because of comfort. As an example, I prefer hearing bands. Plugs do not work because my ear canals are rather small. Muffs do not work well because I wear glasses. The temple pieces create an incomplete seal against my head which allows noise to enter.

In especially noisy situations it is not unreasonable to use two forms of protection. Ear plugs used with muffs are incredibly effective. If you decide on this approach, your heartbeat will be louder than the noise you are protecting yourself from.

Eyes

There are a number of protection options available.

People who wear prescription glasses have a number of options. OSHA-approved prescription safety glasses with side shields are the most effective, but also the most expensive choice. Clip-on side shields are available for normal prescription glasses, though they are not as effective because the lenses are not OSHA-approved. Plastic overglasses are another option. They are designed to be worn over prescription glasses.

People who do not wear prescription glasses have other options, from the very practical to the very stylish.

Full face shields are essential in situations where a large quantity of material may be thrown at the face. Examples include cutting firewood with a chainsaw or sectioning a new driveway with a concrete saw.

Laser levels have become more readily available as lower priced units have entered the consumer market. Although they have extremely weak lasers never look directly into the beam.

Lungs

Inexpensive, disposable nuisance dust masks are available for light, dusty situations where the goal is personal comfort more than protection. They should not be used if there is an actual airborne hazard. I have not had any real success with the disposable types because they trap exhaled water vapor and quickly become a wet, soggy mess. They also have elastic bands to keep them in place, but the bands do not create much of a seal against my face. I have not used one in years.

Protection against airborne chemical exposure must be based on the specific chemical involved. Just because a respirator is appropriate protection for one chemical does not mean it protects against them all. Multi-purpose respirators with replaceable filter cartridges are most appropriate for the multiple hazards experienced while remodeling a house. They are very comfortable and can be worn for long periods. The unit I own protects against paint fumes, pesticides, airborne lead, ammonia-based cleaners, asbestos, and toxic dusts. This covers any remodeling hazard I have ever been exposed to. It was manufactured by one of the major respirator companies and purchased at a local big-box retailer.

Extreme care must be taken to select a proper mask and filter cartridge. When in doubt, call a reputable manufacturer and ask what unit they recommend for your specific situation.

Fit and proper operation are both critical when using a respirator. Physically inspect the unit and perform positive and negative pressure tests each time you put a respirator on, even if it is the seventh time you have put it on today. Read the directions provided by the manufacturer for instructions how to perform these tests.

Knees

Knee pads are one of those situations where you really get what you pay for. Personal comfort is everything, and less expensive pads are generally a waste of money. The better ones have soft gel inside to provide gentle cushioning, and do not bind up behind the knee causing discomfort. Better pads also have tough exteriors to help prevent being punctured by debris.

The ones I use cost about $30 and can be worn very comfortably. Obviously, the real test of a set of kneepads is a project where they must be used for extended periods. An example is laying ceramic tile or installing a laminate floor.

Professional tile installers use a special type of knee pad that extends from the knee to the ankle. This style of pad distributes weight across the lower leg, and does not concentrate it at the knee. I watched a tile installer who needed a knee replacement install our kitchen floor using a set of these pads, and he did it with virtually no pain. They are manufactured by the ProKnee© Corporation. The company has product information available on their website at http://www.proknee.com, but all sales are through distributors. These things are not cheap, but if you have bad knees and a lot of tile or flooring to install, they are worth the cost.

Back

Back supports have become much more comfortable and more effective in recent years, as well as much less expensive. My first back support felt (and looked) like some kind of lady's undergarment from the 1920s. It also cost around $50 because they had just become popular. The one I use now looks like a small padded weight lifter's belt. It an be worn all day, comfortably, and cost me about $20.

Modern back supports are usually made of a black synthetic material held in place by Velcro®. They are used to support the lower spine and are correctly worn just above the waist. The belt holding up your pants may interfere with a back support because the support must ride just above the hips. It's wise to test

the fit before making a purchase. If there is a problem, try wearing a thinner belt with a fairly small, thin belt buckle.

Head

Hardhats are not just for construction workers. They should be worn whenever there is a danger of bumping or scraping your head, or if material may be falling from above. Less expensive hats can be adjusted for size, but they are not easily re-adjusted. More expensive hats have a knob in the back for instant adjustment. This design is preferable because the ability to quickly adjust the size lowers the nuisance factor and encourages you to actually wear the hat. A hardhat often interferes with muff style hearing protection but hearing bands work very well. A hardhat can be worn with a hearing band stored inside the hat above the webbing when hearing protection is not required. I do this all the time so my hearing band is always available when needed.

A hard hat is something that homeowners often refuse to wear. The test of a hard hat's usefulness can be seen in the patina that develops on the outside after it has been used for some time. All of the accumulated scratches, gouges, and dings on my hard hat are evidence of the abuse my head would have taken. This is truly one of the best $8 purchases I have ever made.

Hands

Hands are subjected to four common types of hazards:

Abrasion - Many styles of gloves are available to avoid abrasion, but they differ in their ability to withstand abuse. They can be as simple as thin cotton gloves. Heavy-duty ones are usually made of thick leather.

Chemical exposure - Chemical-resistant gloves are made from a number of materials. Always match the glove material to the chemical hazard. It is a good idea to store the user instructions with the gloves. Please refer to the Directions section later in this chapter.

Repetitive motion syndrome – This is often experienced as tendon problems in the hand and carpel tunnel syndrome in the wrist. Some relief

may be available from wrist supports that keep the wrist straight. A better solution is to plan the work so repetitive motions are kept to a minimum.

Vibration and impact – Vibration- and impact-absorbing gloves are a relatively new development. The wide use of hand-held power tools has increased the impact and vibration hands are exposed to. The better designs use a gel material to absorb and re-distribute the vibration and/or impact so it is not focused on one part of the hand.

Feet

I get a real kick (pun intended) out of the illustrations in typical remodeling books, because they usually show people working in low cut sneakers. This type of footwear is next to worthless while working on any significant project. Just imagine how much protection sneakers will provide if a 30 pound cinder block slips from your sweaty hands and bounces off your toes. Gravity really does work. The only thing worse is bare feet. Just about everyone has sneakers in the closet, but that does not mean they should be worn while remodeling a house. The exception to this is paint or papering projects. Sneakers are fine in these situations since nothing heavier than a can of paint or roll of paper is involved.

Safety boots are available with steel toes to prevent breaking the numerous little bones in the human foot. Boots are available with different sole material depending on the type of surface they will be used on. Make very sure there is enough room for your toes because the toe box will not adjust to your feet like the toes of regular boots do.

As a part-time home remodeling craftsman you are working construction on a part-time basis. The hazards of construction work apply to you as well as anyone working on a jobsite. The only difference is there is no one looking over your shoulder to require you to use safety equipment.

Go to a construction jobsite at lunch time and look at the footwear those folks are wearing. They are no fools. They know what is necessary to safely get through the day. Construction companies have rules about what is acceptable footwear

but they often are not enforced. They usually do not need to be. Construction workers want to do their jobs and go home to their families, not the emergency room.

If you won't consider steel toe safety boots, another alternative is seven to eight inch high work boots made from leather, or leather and synthetic material. Quality boots provide support, comfort, and protection. One of the easiest ways to get hurt is to twist an ankle or roll your foot. Good boots bind the foot into a solid, well supported unit that takes much less abuse because it does not flex as much. It is essentially impossible to twist or roll an ankle in a good pair of boots.

Personal Fall Arrest Systems

This is a rather complicated subject. OSHA-approved full body harnesses have become very comfortable for the user, and on the wallet in recent years. I have personally used excellent harnesses available in the $90 to $200 range. When I mean comfortable, I am talking a 10-hour day, six days a week in 95 degree weather.

The whole point of these devices is to prevent the wearer from falling more than six feet. There is a D-ring on the harness located between the shoulder blades. A six foot lanyard is attached from the D-ring to a solid anchor point. The lanyard has a special shock absorbing design so If a fall does occur, the wearer will not come to a halt with a sudden jerk. Like any kind of fall, falling is not the problem, it is the abrupt stop that causes injury. Because the lanyard is attached between the shoulders, the wearer will come to a stop in an upright position.

OSHA recommends using a harness when working more than six feet above a level surface, or when working near the edge of the surface a worker is standing on. This covers a **lot** of home remodeling situations.

A problem I have always had is a harness tends to get tangled up while it is moved around and stored. It can become a bit of a chore to figure out how to put one on quickly. One trick is to leave the lanyard attached to the D-ring and hook the other end to something on the right side of the harness. (Or the left side if you

are left-handed.) If nothing else is available, attach a large tie-wrap or length of wire to the harness in a loop, and then attach the lanyard to the loop. This also means there is a convenient place to attach the lanyard when not attached to an anchor point, and the position on the right (or left) side provides a clue how to untangle the harness quickly. An alternative is a no-tangle harness. This style is now available and should be considered before making a purchase.

I have personally worn no-tangle harness and found it to be very comfortable.

Harnesses are now available which are designed specifically for women. If you are a woman, or a woman will be helping you, there really is no excuse for a woman to go without proper fall protection.

Tool Guards

The guards placed on power tools are there for a reason. If it is absolutely necessary to remove a machine safety guard, always use a push stick to keep your hands out of the path of the blade or bit. If something bad happens, the push stick takes the consequences, not your hand. You can get another push stick.

Cleanliness

Keep the work area clean and orderly. Stop every once in a while and clean things up a bit, especially if there is slippery or loose material on the floor such as saw dust. Slip and trip accidents are very common ways to get hurt.

From a safety standpoint, a wet/dry shop vacuum should always be considered as essential equipment for the home remodeler because it encourages cleanliness. Please see the section on Shop Vacuums for more information.

First Aid Kits

The ability to quickly react to an accident is vital. The most common accidents are cuts, so bandages of different sizes are very useful. Antiseptic is also important.

As more serious injuries occur, first aid supplies will accumulate around the home. Examples include arm and wrist braces, or arm slings. Make sure these are accumulated in your first aid kit as a hedge against future injuries. My kit includes knee braces (both knees), wrist braces, an elbow brace, an arm sling, and elastic compression (Ace®) bandages acquired due to previous injuries. It also contains a cold compress, a bottle of eye wash, mouth-to-mouth rescue breather, tweezers, and a first aid manual. If a cane or crutches come into your possession it's wise to keep them in a closet for future use.

Directions

Printed directions are not very useful unless they are readily available and in good condition. It is really annoying to need a manual and not have it readily available. This is especially true if you have owned the equipment for a while. The manuals just seem to disappear. Having the correct manual available is also important for safety reasons. There is a much greater tendency to make bad decisions if the equipment manual is not on hand. This is doubly true with safety equipment. I use two approaches.

Maintenance and repair manuals for stationary equipment like table saws are stored in file folders, which are kept in a plastic tote purchased from an office supply store. The tote has a cover which protects the contents, and a handle so the tote can be easily moved as needed. I do the same thing for portable equipment like routers or drills.

The best way to store instruction manuals for safety equipment is to keep them with the equipment. I store them in a plastic bag, and then place the bag and safety equipment in a larger sealable bag or container. As an example, a respirator should be cleaned after every use and dried before being stored. Using my approach, if the mask is still a little wet when put away, the instructions are not likely to be harmed.

If a user manual is lost or damaged a copy is usually available on the manufacturer's web site. I say usually because a manufacturer is only required

by law to provide service support for five years after a product is no longer manufactured. I have acquired used equipment and found the manufacturer no longer had manuals available. If this happens to you try a keyword search on the Internet for the manufacturers name and the model number. There are companies who sell replacement parts for older equipment, and they usually have electronic versions of the manuals available. (They are needed to determine correct part numbers so they can sell you replacement parts.)

The best approach is to store paper manuals in your shop, and electronic versions of them on your computer. No matter what happens, you will have the information.

Cell Phones

Cell phones are everywhere. The ability to call 911 quickly is an important reason to keep one on your person while working. It is fine to put it down somewhere close, but the odds are good that an injury will occur after you walk away from it. My phone is kept on my left side while working. Because I am right handed, the odds of being injured are probably greater on the right side, and that has been my personal experience. In case of an injury, a phone carried on the left side has a greater chance of remaining undamaged, and the same goes for my left hand. Having a working hand and cell phone on the same side of the body just makes sense if there is an accident.