# TerranearPMC Safety Share

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Drill rigs are an integral part for performing work in the Environmental Industry. They are used in many applications and investigations necessary for soil and ground water contamination determination. Those in the industry are familiar with the various types of drill rigs, ranging from hollow stem, percussion rotary air blast, cable tool drill rigs and direct push: each has its specific purpose and is designed for definite project objectives.

One of the most popular types of drilling applications uses helical screw-type augurs with a bladed bit to drill into sub-surface soils. The debris "rides the flights" out of the hole as the auger drills deeper. The stem may be solid or hollow to allow concrete grout to be pumped into the hole, creating a cast piling that will support heavy loads in weak soil.

Percussion Rotary Air Blast (RAB) drilling is primarily used for mineral exploration. Also known as down-the-hole drilling, this method employs a pneumatic hammer with tungsten "teeth" that chew away the rock surface as the debris is blown up and out through the excess space surrounding the rod. Similar to the RAB is Air Core drilling, however, this method typically is used in softer soils and, because it has a central evacuation tube, debris is moved out of the borehole and allows for convenient soil samples to be collected.

Cable tool drill rigs are used to drill water wells in bedrock aquifers. A cable raises, turns, and drops a hammer, pulverizing the soil in the hole. The debris is then mucked out by a "bailer" - a bucket with a trapdoor bottom - that scoops out the overburden. The hammer is then re-employed and the process repeats.

Direct push drilling is similar to cable tool drilling except the hammer does not rotate. It is used for intrusion into in very soft soils. This method can provide a comprehensive liner examination of a location based on specific depths (typically 5-foot increments) thereby observing geologic soil stratifications.

Working on/near drill rigs require hearing protection as the noise produced from mechanical operations as well as motors, generators and compressors can produce noise levels that significantly exceed the OSHA PEL (90 dBA) or other occupational exposure limits (i.e. ACGIH TLV of 85 dBAs). In addition, various soil types can also contribute to the noise exposures (hard rock vs. soft soils). Establishing a perimeter around the drill rig and other equipment where hearing protection is mandatory is a widely used practice.

Long shifts, arduous labor, wet, slippery work surfaces, and uneven terrain have been known to create hazardous conditions, whereby workers are prone to slip, trip and falls. In addition, working with heavy equipment day after day, activities can become repetitive, leading to complacency, thus causing employees to loss focus; A precursor for serious accidents.

Proper training, electrical surge protection, regular equipment checks and maintenance, along with appropriate lockout/tagout procedures are designed to control accidents and injuries that result from improper handling and maintenance of energized or mechanical equipment.

Because drill rigs extend several feet into the air, during adverse weather where lightning is a factor, the rig, itself becomes a conduit for electrical shock and electrocution. Today, there are "weather Apps" that can assist drilling operators to determine when lightning is close to the work site, thus necessitating a work shut-down. However, many drilling companies have adopted the conservative approach to shut down work activities as soon as lightning is visible, regardless of distance.

Electrical hazards are always present at drill sites. Look for breaks, exposed wires, and looseness at the plug or housing connections. Unless a piece of equipment is double insulated, be sure there is a ground wire and the third prong has not been cut off. Use only extension cords that are free of splices, taps, bare wires, or frayed and deteriorated insulation while using 3-prong adapters (the third prong is the ground, thereby allowing electricity that is not properly connected to have a path other than human contact) and using GCFIs (this automatically shuts down an electrical circuit in the event accidental contact is made).

Other things to consider:

- Always wear eye protection.
- Wear clothing appropriate for drilling or boring; avoid long, loose shirtsleeves, neckwear, or untied long hair. These types of hazards can be caught in the drill.
- When possible, always secure your work on a stable platform using clamps or vices. A secured work piece will help ensure straight drilling.
- Prior to beginning drilling operations, inspect each work piece for nails, knots, or flaws that could cause the tool to buck or jump.
- Use gloves and appropriate safety footwear when using electric tools.
- If any operational problems are noted, remove the drill from service and get it repaired immediately.

OSHA regulations (29 CFR 1910.38, "Emergency Action Plans") requires employers to ensure work sites have appropriate employee training, notification systems, evacuation and medical responses. This is especially pertinent for drill sites. As dictated through such proactive worker safety programs (i.e. the integrated safety management system), clear roles and responsibilities are a necessary component to ensure workplace hazards are properly controlled. All too often, when personnel do not understand their on-site responsibilities, workplace hazards - whether identified or not - can go unattended due to proper controls not being instituted.

Unfortunately, accidents that result from failure to pay attention to safety protocols and procedures happen all too often. A good motto to keep in mind is that no job is so important or service so urgent that rig operations cannot be done with a "safety first" mindset. This is true for drill sites as well as all work locations.

**A Workplace Accident - If you don't think it will happen to you, find the person who had it happen to them**