

On the Waterfront

by Jim Reed

Well, I'm already hearing superintendents wondering when the first snow is coming. It's been a long season and we're only thru May. April was wet and cool, May was dry and cool, and golfers wonder why their course isn't in U.S. Open condition. As of June 4th, Cog Hill reported .1" of rain since April 26, Exmoor had .4" for May and Glen View Club had .6". Irrigation systems are being put to the test and the roughmowers are being put to bed. Are we having fun yet?

With thanks to Frank Peterson of Dura Plastics, Chairman of the Fittings Group of the Irrigation Association, I have received permission to reprint excerpts of a handbook of irrigation design guidelines and precautions titled "Designing, Operating and Maintaining Piping Systems Using PVC Fittings", written and prepared by Ron D. Bliesner, Vice President of Keller-Bliesner Engineering of Logan, Utah on February 3, 1987. Mr. Bliesner's report begins with the following introduction:

"The piping industry was revolutionized by the introduction ... of PVC pipe and fittings. Piping system components manufactured from PVC exhibit excellent corrosion and resistance, are lightweight, have a high strength-to-weight ratio, are exceptionally durable, and have great resiliency ... The growth of the industry has been due to the availability of a wide range of PVC pipe sizes and compatible fittings that are inexpensive and easy to install.

The revolution in piping materials has been followed closely in irrigation systems ... by a revolution in sprinklers and control equipment. The advent of the valve-in-head sprinkler and computerized control systems ... has provided nearly unlimited flexibility in system operation. In earlier systems, the design consisted of the mainline system and lateral system, with a control valve separating the two. The pipe and fittings downstream of the control valve were pressurized only when that block was operating; they were vented to atmosphere through the sprinklers, so high surge pressures were unlikely. Also, the control systems were less sophisticated, with less flexibility, which meant that flow-rates in the system could be more easily balanced at design time, reducing the potential for high surges.

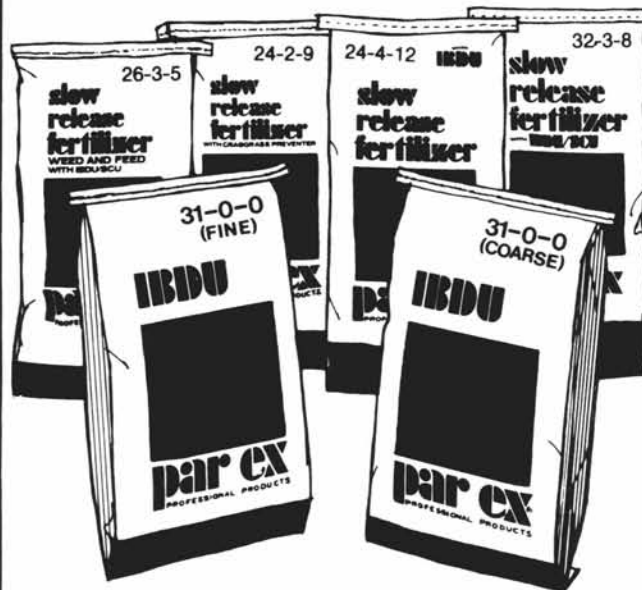
Today's systems are usually pressurized continuously. The control points in the systems are now at the sprinkler, subjecting all piping components in the system to maximum surges. The flexibility in control systems allows an operator to put water anywhere in the system every few minutes. Without adequate precautions, very high velocities can be generated, leading to high pressure surges. Also, valve-in-head sprinklers often close quite rapidly, creating sudden changes in velocity at the sprinkler. Pressure surges due to valve closure have been measured at over 60 psi in valve-in-head systems and the potential exists for even higher surges.

Early irrigation systems were constructed mainly of steel pipe ... Sprinkler swing joint assemblies were nearly always constructed with steel components. From a pressure capacity standpoint, the components had strength well beyond the stresses put on them. With plastics ... a given fitting or pipe used in an irrigation system is not nearly as strong as the steel counterpart it replaced.

NEXT MONTH: PVC STRENGTH CHARACTERISTICS AND TYPICAL PVC FITTING FAILURES

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How to Handle an Employee's Impaired Capability to Perform

One of the toughest people-related safety problems the first-line supervisor is faced with is that of the employee with a mental or physical deficiency. Some of these deficiencies could be the result of partially incapacitating injuries, illness, extreme fatigue, drug and alcohol abuse and emotional disturbances. Such conditions can affect strength, stamina, dexterity, coordination, concentration, judgement, memory, mental alertness, reasoning and so on. Substantial evidence has indicated that an alarmingly high percentage of accidents are caused primarily by impaired physical or mental conditions.

The first step in taking care of this problem is to detect and identify the problem. The only way this can be done is to be conscious of each individual worker.

Generally, the first-line supervisor gets to know his people well enough to detect any abnormality in their behavior. There are some specific symptoms that could alert the supervisor to a problem. The supervisor should be aware of unreported injuries that may have been suffered on or off the job. Telltale signs could be limping and other movements that suggest an injury is being favored, homemade bandages and complaints about injuries sustained on or off the job.

An employee who is inattentive or physically spent, or one who shows signs of sleepiness, irritability or poorly coordinated movements could be displaying signs of fatigue or a hangover. Being hungover could be almost as bad, in some jobs, as being intoxicated.

Dizzy spells, vomiting, unsteadiness and an uncharacteristically pale or flushed complexion could well be signs of an illness that may render an employee unable to work safely.

Excitable talking and gesticulation, startled reactions to sound, trembling and talking to one's self could be signs of emotional agitation.

Surely, however, the symptoms of any type of physical or mental deficiency could not be exactly described in an article, so the best indicator is behavior abnormal to the employee's general personality.

Just as symptoms cannot be described in a hard and fast rule, the details of how to handle any given case cannot be described either. Such details depend upon the nature of the disability or impairment, your knowledge of the person, the nature of the work situation and established organizational practices.

However, some general steps for dealing with such cases can be recommended. First, check with the employee to verify the initial impression. The general tone of such a check should be one of sympathetic inquiry. Second, unless your check with the employee completely eliminates your initial impression of a problem, discuss the case with your immediate supervisor to decide how to handle it.

When solving these problems, remember these general do's and don'ts:

(continued on page 23)

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In the case of suspected intoxication, do not take a chance on an alcoholic condition. Handle the employee with tact. Don't accuse the employee of being drunk. Your objective should be to get the employee out of the work environment with the least amount of disturbance.

In the case of emotional disturbance, do not try to play the role of psychiatrist, psychologist or family counselor. Avoid advising the employee on how to handle the problem. Do listen if the employee wants to talk about the problem. Many emotionally disturbed persons calm down once they have talked about their problems to a willing listener. Limit your advice to persuading such persons to consult their physician. The latter knows where to take it from there.

In the case of acute illness, don't take a chance on the following symptoms: abdominal and chest pains, unaccountable vomiting, violent trembling, disabling weakness, acute head pains, extreme nervous agitation, visual disturbances, unconscious states, breathing difficulty, loss of muscular control, repetitive attacks of dizziness or signs of internal bleeding. Such symptoms call for professional medical attention.

By handling these sorts of cases effectively and tactfully, you can, in addition to preventing potential accidents, develop a sincere feeling of respect and willingness to cooperate among your employees.

—Bill England

Divots, Miami Valley Golf Course Supts. Assn.

Wetting Agents Help in Water Short Year

by Demie M. Powell

The water shortage is here again! (As if you need to be told.) What can be done now to minimize turf losses where you cannot irrigate or must significantly reduce your water consumption? Not a whole lot — except to pray for rain and use wetting agents.

Wetting agents don't make water, but they do make the most out of what water is there. Wetting agents can maximize reduced water resources several ways. First, they improve infiltration so less water runs off or sits on the surface and evaporates.

Second, wetting agents help water wet the soil profile more uniformly, preventing localized dry spots. This reduces stress and keeps these areas from going dormant. It also reduces hand watering which uses up water that is probably needed elsewhere.

Third, wetting agents allow a greater percentage of the soil moisture to be available to the roots of your turf. In other words, you can go longer between waterings which will help reduce your total water consumption.

All of this means you can get by with less water and less turf loss. That will be good for you, your course and your club. It will also be good for the whole turf industry as you show your state that you are doing everything in your power to conserve water by using it wisely.

Wetting agents are not "cure-alls" or "miracle products" — they do not create water. But they do stretch your water supplies so you and your course can survive restricted water use and drought.

Lightning A Flash in the Sky

If we lived during the time of the Ancient Romans, we would believe that thunder and lightning were the weapons of the god Jupiter. Ancient Romans thought that such powerful and deadly weapons could belong only to the greatest of gods. Thunder and lightning was one of the great mysteries of nature.

Now the mystery is solved. We know, through scientific study, that lightning is really a flow of electricity, formed high above the earth. One thing that has not changed over the years is it can make us quake in our boots and raise our heart rate with the anxiety of seeing a bolt of lightning and waiting to hear the crack of thunder. Before you can say, "YIPES!", your pet dog has run under the bed or found some place to hide. All creatures great and small have an instinctive respect for lightning.

Do you know how lightning produces thunder? As lightning travels, it heats the air in its path. The sudden heating causes the air to expand violently. The cool air farther away is pressed into a smaller space. This process starts a great air wave that results in THUNDER.

Before you hear the thunder, flashes of lightning take place between a positively charged area and a negatively charged area. These may be different parts of the same cloud, different clouds, or a cloud and the earth.

A spark between a cloud and the earth may measure as much as eight miles in length. It may travel at a rate of 100,000,000 feet a second. Lightning that reaches between oppositely charged clouds may have a length of 20 miles. Photographs of lightning obtained by radar indicate that some cloud-to-cloud lightning strikes may measure 100 miles in length.

Lightning between clouds does not cause any damage on earth, because the electrical energy is dispersed in the air. But lightning between a cloud and the earth often causes loss of life and property. A bolt of lightning can kill a person or start a forest fire. Scientists have found that one stroke of lightning usually measures more than 15,000,000 volts.

There Are Different Kinds of Lightning

All lightning strikes are basically about the same. But they appear to have different forms, depending on the position of the observer.

FORKED, ZIGZAG, OR CHAIN lightning is a chain of brilliant light that appears to zigzag. It actually follows a winding path, like a river. The single streak of lightning often breaks into several branches or forks.

SHEET lightning has no particular form. It is usually a bright flash that spreads all over the horizon and lights up the sky. Sheet lightning is really light from a flash or chain lightning that takes place beyond the horizon.

HEAT lightning, often seen on summer evenings, is the same as sheet lightning, but the flashes are fainter. Thunder usually does not accompany them. The lightning occurs too far away for thunder to be heard.

BALL lightning seems to consist of balls of fire, as small as walnuts or as large as balloons, that last about three to five seconds. They fall swiftly from the clouds until they strike the ground and explode. Sometimes they roll slowly along the ground and do not explode until they hit an obstacle. Ball lightning is the least understood of all forms of lightning. Many

(continued on page 24)

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FLASH IN THE SKY (continued from page 23)

meteorologists even doubt that it exists. They think it may be an optical illusion. However, so many reliable witnesses have seen it, that scientists have begun to study it. They have produced ball lightning in the laboratory. This kind of lightning does not appear to be dangerous.

According to the United States Department of Commerce: 1800 thunderstorms are in progress over the earth's surface at any given moment, and the lightning strikes the earth 100 times per second. The average death toll from lightning is greater than from tornadoes or hurricanes.

Normal household current usually contains 200 amps whereas lightning can contain up to 200,000 amps. Don't be misled by amperage. A person can be killed with as little 3 amps of electricity.

Lightning also poses another threat. Heat is a problem with lightning strikes. A person struck by lightning can be burned with temperatures as high as 15,000 degrees Fahrenheit. Lightning presents three initial problems:

1. High Voltage
2. High Amperage
3. High Temperatures

These three things can inflict serious damage to a person.

Afternoon storms make the golfer and golf course employees a likely target. No one likes to think about getting struck by lightning. Perchance you find yourself in the midst of a surprise storm, keep these precautions in mind:

Keep away from trees. Lightning generally strikes tall objects such as trees, posts, poles, etc. By being close to these objects you may become a target and get shocked.

Stay away from water. Water is an excellent conductor of electricity and you may get shocked from the lightning strike or standing on wet grass. Do not seek shelter near a lake, river, etc.

Stay away from metal huts. Lightning, as with all electricity, is conducted through wet surfaces and metal.

Seek shelter. Get inside a building or inside a closed car. Do not seek shelter in a small partially enclosed building. Many outdoor "huts" still get wet floors.

Open areas. If you are in an open area such as a fairway, crouch down or lay on the ground.

If skin tingles, duck. Static electricity will build just before a lightning strike. If your skin starts tingling, this is an indication of an impending strike. Get onto the ground quickly.

Weather can change from beautiful sunshine to a torrential downpour in a matter of a few hours, use common sense and get back to the club house or safe shelter before lightning strikes.

How to Treat a Victim Struck by Lightning

Above all do not panic. Nothing gets done in a panic.

1. Before leaving the safety of a building, call Rescue. If possible, have someone watch for Rescue to guide them to your exact location. Time is of the essence. Resuscitation needs to be started as soon as possible after the lightning strike.

2. Check the victim: If cardiac arrest, perform CPR. Keep working on the victim until Rescue arrives.

- There may be burns on the skin or burns inside the body. As electrical current passes through the body, it burns the tissue. From the entrance into the body until it leaves the body through the exit wound, the current damages the tissue in its path.

(continued bottom page 25)

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• Victims are usually thrown into the air, landing several feet from their original position. This landing may have caused broken bones and more importantly, it may cause a broken neck. A broken neck, if not handled properly, can cause permanent paralysis.

• Other people near the victim can be injured, too. Golfers play in groups from two to four. Anyone in the group standing too close or standing on damp ground can receive a serious shock. You may be treating more than one victim.

• Unless there is a severe threat to your life and the lives of the people around you, do not move the victim. Do NOT be tempted to put the victim into a golf cart and make a run for the clubhouse, regardless of what the people around urge you to do. Remind people around you not to panic!

Lightning is an unpredictable act of nature that makes a mighty and sometimes deadly statement of force. True respect of this force is to know the rules for safety and to follow them.

Credit — Charlotte Jones/The Florida Green

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Broadleaf Herbicide Timing Study

by Zac Reicher, Clark Throssell,
Jeff Lefton, & Dan Weisenberger

Broadleaf weed control is most effective when herbicides are applied in the fall, but with new lawn care customers or areas that need a rescue treatment, broadleaf herbicides are often applied in the spring. A study, in its second year, was initiated to determine the effectiveness of spring broadleaf weed control, specifically to compare ester and amine formulations of a combination herbicide containing both 2,4-D and 2,4-DP. The ultimate objective of this study was to correlate weather conditions with weed control and develop a model to determine optimum timing for spring-applied amine and ester formulations of broadleaf weed herbicides.

Weedone DPC ester and Weedone DPC amine were applied weekly from 3 March through 11 May, 1989 and 3 March through 7 May, 1990 at 4 pts./A (0.925 lbs. ai/A) in 80 gals. H2O/A. This study was repeated at two locations each year, the Purdue University Jet Propulsion Laboratory and the Purdue Agronomy Research Center. Weed counts were taken in mid-April and mid-June of each year.

A number of conclusions can be drawn from the two years of data:

1) Very early spring treatments are not effective. The definition of early spring varies from year to year. Neither formulation gave adequate control when applied before 7 April, 1989, but in 1990, neither formulation gave adequate control only when applied before 11 March.

2) The ester formulation is far superior to the amine formulation in the early spring. In 1989, the ester provided better control than the amine when applied from 7 April through 27 April. The ester provided better control than the amine when applied between 16 March and 28 March, 1990.

3) After a certain date in the spring, control from an amine is equal to that of an ester. In 1989, this date was 28 April and in 1990, the date was 5 April.

The difference in the results from year to year demonstrate that herbicide application scheduling cannot always be based on the calendar. Rather, it should be based on a weather factor such as degree days, soil temperature, etc. With help from the National Weather Service and possibly a third year of data, a model will be developed to determine optimum timing of spring-applied broadleaf herbicides.

Credit: MRTF Newsletter

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Leaves, Limbs, Needles and Boughs

by Fred D. Opperman

This month's selection brings back childhood memories. I can recall that when I saw it blooming it meant only a few more days of school were left and then 3 months of summer vacation. Gee, just think we had 3 months of vacation then, now in our profession one can hardly think of a summer vacation, let alone 3 months of it.

Okay, back to leaves and limbs and put those vacation thoughts away till the snow falls. My childhood memory is of the Ohio Buckeye, *Aesculus glabra*. We had a couple of these trees on the street I lived on and they were spectacular in full bloom.

Leaves: Opposite, palmately compound, with 5 or 7 leaflets; leaflets obovate to oblanceolate, long pointed at the tip, tapering to the base, up to 6 inches long, less than half as wide, toothed along the edges, green and smooth on the upper surface, green or much whitened on the lower surface.



Flowers: Numerous, yellow-green, in large clusters sometimes nearly 1 foot long, appearing in May, the petals of each flower of different lengths.

Fruit: Prickly, spherical or nearly so, up to 1½ inch in diameter, pale brown shiny seed inside this prickly cover. I believe I have to credit this tree on the reason I don't smoke today. We used to hollow out these nuts, get an elderberry stem and then straighten out coat hangers to push the soft pith out of the stem and make a pipe.

Growth Form: Medium tree to 55 feet tall; about as wide; trunk diameter up to 15 inches. Rounded to broad rounded in outline, usually low branched. Foliage is very dense.

Bark: Gray to pale gray, deeply furrowed and roughened when mature.

Twigs: Stout, pale brown, smooth; leaf scars opposite, triangular, with 3 groups of bundle traces.

Buds: ovoid, pointed, reddish-brown to yellowish, up to ¾ inch long, not hairy, not sticky. Lateral buds are smaller.

Wood: Soft, close-grained, light in weight, pale brown to nearly white.

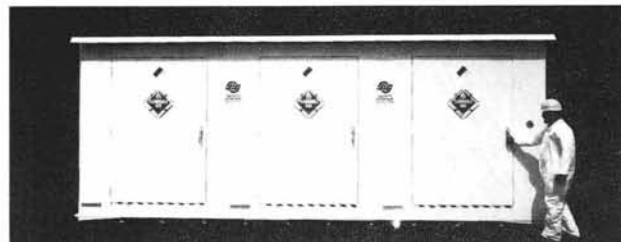
Culture: Transplant in the spring. Likes moist deep, well-drained soils, slightly acid. Full sun or just partial shade.

Distinguishing Features: The Ohio Buckeye differs from the Horse Chestnut by its non-sticky buds. It differs from the Red Buckeye (*Aesculus pavia*) by the greenish-yellow flowers and prickly fruits.



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Charcoal When It's Wet — Beware

Be careful how you store charcoal in summer heat, fire officials warn. If charcoal briquettes get wet, they can heat internally and — with air temperatures in the 90s and above — ignite spontaneously.

Charcoal should be stored in a cool, dry place. If it gets wet, it should be dried thoroughly where fire is not a danger, such as on the lid of a garbage can or on a cookie sheet. Once it is dry, it can be used normally. Because of the fire hazard, wet charcoal should not be discarded with other combustibles.

Arthropods

Common soil arthropods belong to a restricted number of orders which include:

Arachnids	spiders and mites
Myriapods	millepedes, centipedes
Collembola	springtails
Coleoptera	beetle larvae
Diptera	flies, ants, termites.

Mites feed on decaying organic matter. They are from 0.1 to 1 millimeter in size and can easily feed inside of dead plant roots. They burrow actively and help keep soils aerated.

Myriapods are active feeders on decaying plant remains. Some feed on living plant parts when soil organic matter is low. Some ingest soil particles and in so doing, condition the soil in the process. The gut of many of these organisms is favorable for the humification of plant residues. Small woodlice are often more active in soils too dry for earthworms.

Springtails are wingless insects that are from 0.5 to 2 millimeters long. They feed on decaying organic matter.

Beetle larvae are much larger and have a greater impact on the soil as burrowers. Also, they often feed on living grass roots.

Fly larvae live on decaying organic matter for the most part. Ants and termites are soil movers primarily, although some termites do ingest soil and mix it with organic matter.

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