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Kubota

1972-2012: Celebrating 40 Years Strong in America

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>> Overseeding a native soil Kentucky bluegrass field. The KBG fields at SoccerPlex receive more than 750 hours of traffic per year.

>> **Top right:** Thirty-five soccer matches in 7 days on SoccerPlex Stadium (2011 FOY). Note the multiple lines (full sided that got slid over during a weekend tournament and small sided fields for matches that got played during the week prior).

>> **Bottom right:** Lacrosse field shifted to the far side of the field.

proper balance, these three hormones work together to reach the end goal of healthy, natural growth.

Plants dealing with heavy traffic and stress also benefit from extra amino acids and carbohydrates. As needed, managers can supplement these "vitamins" to sustain the natural plant processes like photosynthesis, respiration, and recovery from antioxidants.

With the use of biostimulants in conjunction with plant growth regulators, Sports Turf Managers are able to exercise more control over plant growth processes. Different demands on fields and unpredictable weather conditions change the needs of the turfgrass plant almost daily, so monitoring plant processes at all times in conjunction with weather and traffic sets the "diet" for maintained plant health throughout the year.

>> Repainting lacrosse fields (at night) 2 days into a 4-day lax tournament (fields took 36 games of lax in 4 days due to the move).

TRAFFIC MANAGEMENT

Traffic management is the most labor-intensive piece of the puzzle for high traffic field success. However, the cost of labor on the front side of field deterioration should be seen as pro-active and preventative. Overall, it actually saves money and labor once a field requires sod work or a field must be closed for a complete renovation. Managing traffic effectively will allow all fields to remain open during the full duration of the event season and require less "repair" work.

Traffic management includes two parts: Re-sizing and shifting fields to adjust traffic patterns; and addressing traffic patterns directly to improve weak areas

Re-sizing and shifting field layouts moves high traffic areas and provides the embattled turfgrass in those areas a chance to recover. Soccer and lacrosse fields have the most flexibility for re-sizing and shifting because the rules call for minimums and maximums on the competition dimensions.

Start with shifting the center of the field. The core of soccer and lacrosse is played up and down the center of the field. High traffic areas such as goalmouths, referee lines, and bench areas get moved accordingly with the move of the field center.

Swapping the side of the bench areas is also important. Teams for all sports warm up directly in front of their bench. In one day of seven soccer matches, a 15-yard x 15-yard area directly in front of each bench sees a minimum of 126 players stretching and kicking to get loose. Rotating the bench areas from one side of the field to the other in conjunction with shifting the field allows the field to experience optimum recovery.

American football fields are much narrower than soccer or lacrosse fields, so they too can be shifted and moved. This is especially true for practice fields where goal posts are not required. With a slight shift, the heavy traffic area of the center of the field allows recovery.

The key to football, as with all sports, is to spend time communicating and educating the user groups and coaches to empower

them as stewards of the field. "Telling" or "demanding" these changes does not work. Educate them. Include them in the discussions to attempt to understand their needs. Empower them with the goal of improving the field quality.

Setting forward on a program to move and re-size fields should start and end with a positive message that the field is going to be in professional condition with reduced closure time for renovation. No coach or administrator will argue with a better field. But the message has to be positive make sense. Yes, it will be a challenge. But communication will serve key in success.

ADDRESSING TRAFFIC PATTERNS DIRECTLY

In conjunction with re-sizing and moving fields, apply intense maintenance directly to the high traffic areas. Customarily, an athletic field is maintained in a uniform manner across the field. And in some situations, that standard can still be followed. But under high traffic conditions, extra care must be given to the areas degraded by the heavy traffic in order to maintain their quality compared to the rest of the fields.

Soccer traffic creates a diamond-shaped pattern that stretches from the goal box to the touch sideline at midfield, and then back to the goal box on the other end. Add extra aeration and nutrient applications to those areas.

Small-sided soccer fields have a wear pattern across the width of the full soccer field, requiring less maintenance to the center of the big field but more across the width. Rotate mall-sided play with full-sided play to allow for recovery. For lacrosse, topdress inside the arch and crease areas heavily with sand. The sand protects the crown of the plant from the direct traffic that these areas receive. For recovery purposes, aeration and nutrient applications are focused to the worn areas as the field is shifted away from that area.

American football fields should be topdressed heavier down the center than the outsides. More aeration should take place through the center in conjunction with a completely different nutrient management approach.

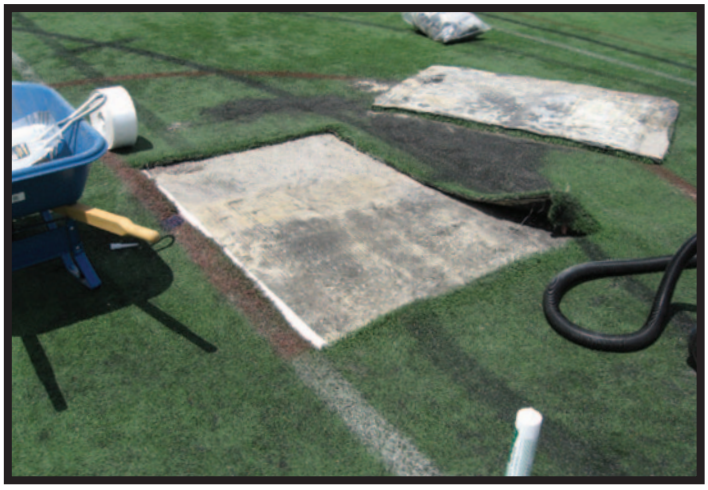
The success of "managing traffic" will be evident in increased quality of your high traffic fields. With the extra work that goes into field movement, sod work will nearly be reduced and/or eliminated. And as your traffic management process evolves, the condition of high traffic fields will continue to improve as you discover new ideas and try different approaches that fit your specific situation.

Using these three methods, Sports Turf Managers will find proactive and creative solutions for meeting the demands of high traffic athletic fields. As Sports Field Managers, we all constantly adjust our approach due to many variables: weather, resources, and coaching demands. But incorporating these new practices will help produce healthy, strong and durable grass plants that can withstand heavy traffic and also reduce spending on expensive fungicides, grass seed, and irrigation. ■

THE BASICS of maintaining synthetic turf

LET'S BEGIN by acknowledging that synthetic infill fields are NOT maintenance free. No matter what anyone says, these fields need maintenance routinely. Secondly, what comes out of these fields must be replaced, meaning that the infill material disappears from the field as it is carried off by players, wind, rain, snow, snow removal, routine maintenance, etc, and being that the infill material is the supporting substance of these fields, it will need to be replaced.

When we service a field we typically find that most fields are lacking infill material whether it's all crumb rubber or rubber/sand mix; we also find the turf fibers are laid over with minimal support causing them to prematurely break off. But the worst enemy to the synthetic fibers is the sun and ultraviolet rays that it must endure day after day. By maintaining a proper amount of crumb rubber and allowing approximately only a ½ to ¾ inch of exposed fiber, you are preventing the fibers from folding over and lessening the amount of material breakdown due to ultraviolet rays. On average an athlete or end user will carry off 3-4 pounds of infill material during a playing season. This needs to be replaced annually to support the fibers and provide longevity for the playing surface.



>>**Above: IF YOU HAVE TO DEAL** with patching, contact the manufacturer or a reputable service company. There are special materials that you will need and the local hardware store, big or small, does not carry them.

>> **Above left: IF YOUR TURF** is surrounded by bermudagrass or any other creeping stolon-producing grass, be prepared! >> **Above right: DUST,** dirt, pollen, body skin cells, screws, nails, track spikes, bobby pins and human hair to name a few do not break down in these fields; it is truly amazing how much exists.

To calculate your needs, you need to measure the amount of crumb rubber in a variety locations within the synthetic field boundaries (we measure 10 locations using the ASTM 1936-10 guidelines for Gmax testing as our test points) to determine what you have. If your turf is 2 ¼ inches tall and you have less than 1½ to 1¾ inches of infill, you need to add more. Most crumb rubber infill calculates to 0.55 pounds per square foot for a ¼-inch lift. Most rubber/sand infill systems will not need additional sand as it tends to stay stable within the turf. There are rare occasions when the sand is removed due to operations like snow plowing or torrential downpours that cause flooding; if this occurs you will need to be added to the mix.

GROOMING ESSENTIAL

Grooming the field is an essential maintenance task that needs to be better understood. It is highly recommended to use a good groomer designed for synthetic turf such as the Greens Groomer or the Wiedenmann units. When using any groomer, adjusting it so that it lightly touches the fibers will provide the best results. Do not lower the entire weight of the groomer onto the turf unless you are trying to level out or move crumb rubber to fill an area such as a lacrosse goal crease. When tickling the fibers with the groomer's brushes the intent is to stand the fibers up to minimize the lay over from use.

Often I am asked how much or how often should I groom my field. There is no true, exact answer but from my experience I recommend that the field be groomed every 300-350 hours of use. I have read on the web articles saying 400-500 or more hours and much depends on the manpower available. At minimum it should be groomed several times during the highest use periods and less during the down times (if there is such a thing).

Trash and debris removal is another constant nuisance and needs to be done whenever it exists. Timely removal is important to keep the trash and debris from becoming ground into the infill material, which causes removal problems later. Sunflower seeds, chewing gum, candy wrappers, cigarette butts, wire ties from nets, and broken sand bags or stone bags used for weighting down goals are just some of the typical items we see when deep-cleaning a field.

Removal of chewing gum is largely overlooked and needs to be addressed as soon as possible; most chewing gums today never harden and with the intense heat in the field it becomes gooey and eventually spreads across the turf surface. To remove use either ice cubes or a freezing spray agent to harden the gum, chip it off and remove it.

Weeds can exist and thrive in synthetic turf and if your turf is surrounded by bermudagrass or any other creeping stolon-producing grass, be prepared! These grasses tend to find their way into and under the synthetic turf and since temperatures on these fields reach optimal growing peaks before the surrounding turf, once they start spreading beneath they will find the drainage holes and send their shoots upward for the sun light. These plants become very hard to remove due to their sewing machine affect and in most cases will need to be treated chemically (as approved by the turf manufacturer) to kill them off. Easiest way is to prevent it from growing under from the beginning, understand it, look for it and act quickly when discovered.

WEAR AREAS NEED ATTENTION

Pay attention to heavy wear areas; these fields wear just like natural turf with the exception that you can't grow it back in once it is gone, so don't let it wear out. Football—center of the field between the hash marks; soccer—penalty kick area, corners, goal crease; field hockey—goal crease, penalty arc; lacrosse—goal crease areas, center of the field where face offs take place.

Lacrosse, whether men's or women's, has the ability to destroy a goal crease in as little as one year if not maintained. The infill material gets kicked or shuffled out, the fibers take a beating and break off quickly without the support of the infill material and before you know it, you have a big black area that is the backing of the turf that you will have to patch or replace. If you have to do this, use either the pieces you saved from installation or maybe cut out from outside the playing area so that it matches in color and type.

Even after one year it won't be a perfect match (even if left on a roof top to sun burn like the turf on the field) because the surrounding fibers in the field will have seen use and started to mat out or break down and if you are patching it must have worn out. Contact the manufacturer or a reputable service company to save you the pains of having to deal with the patch. There are special materials that you will need and the local hardware store, big or small, does not carry them. Don't use Gorilla glue, liquid nails, and styrene bonding agents, and/or drywall screws or framing nails for repairs as they are not designed for synthetic turf and may become a liability nightmare later down the road.

Painting may or may not have to be done on these fields depending on whether or not everything was inlaid during installation. If you have to paint use only paint that is approved for synthetic turf field; it seems that every year some company announces that they have synthetic turf paint, but do your homework and look at a company history and get recommendations.

If you need to remove the paint ask the supplier: How this is done? Can it be done? What will it cost? How long will it take? Do you need special equipment and chemicals? Have their products been endorsed by any manufacturers and is your turf manufacturer one of them? If you have to paint try to do it at times other than the heat of the day, and if you are removing lines it works much better to do this at night or early in the morning when the turf is the coolest. Chemicals used during the heat of the day will evaporate long before they start to work and this will only cost you more time and materials.

Dust, dirt, pollen, body skin cells, screws, nails, track spikes, bobby pins and human hair to name a few do not break down in these fields, they remain for much of the life of the field and it is truly amazing how much exists. Special equipment with hepa-filter vacuums will be able to clear this out and remove it from within the turf. Rain, snow sleet and hosing do not help.

Static is common and can increase with humidity and sometimes age; if you need to combat this you can do so with a several household products. Liquid Tide washing machine soap and/or the use of a softener (Snuggles!) both work well when sprayed on the turf.

Eventually someone will ask if these fields need to be disinfected and my suggestion is to review Dr. Andrew McNitt's research pages to obtain the best answer (http://cropsoil.psu.edu/ssrc/sportsturf-scoop). Information can also be found by visiting the Synthetic Turf Council's website at http://syntheticturfcouncil.org/.

Lastly, unlike natural turf, we can't see what is going on with these fields beneath their surface. ASTM has recommended that these fields be tested annually to determine their hardness in G force (better known as Gmax). There are those who do not believe this is necessary, but I can tell you that it is an important tool. If you don't do it for a year, two, four or six you have no history data to determine what has been going on. I have tested 2-year-old fields and 11-year-old fields with less than ¾ inch of fibers remaining and almost no infill and yet the newer one tests harder than the older. Does this mean we are no longer testing the turf and we are now testing the stone base beneath? Good question and since we don't have 11 years of historic Gmax testing, we can only imagine we are now testing the Gmax of the stone base.

Synthetic fields are a great tool and if properly maintained will provide years of play for all users. What you have just read is only the tip of the iceberg and there is much to learn about these fields. Don't be afraid to ask your peers or contactor if you don't know; it may prevent you from making a huge mistake. ■

Jim Cornelius, CSFM, manages Fisher and Son Company's Pro Services division. His commitment to educating the owners of these fields will ensure playability, safety and performance for all users, which will eventually create longevity to the ever-evolving synthetic turf industry and the fields they service.

JOHN MASCARO'S PHOTO QUIZ

John Mascaro is President of Turf-Tec International

Can you identify this sports turf problem?

Problem: Worn turf with plastic mesh
Turfgrass area: High school football field
Location: Southern United States
Grass Variety: 419 bermudagrass and bahiagrass

Answer to John Mascaro's Photo Quiz on Page 33

Background illustration courtesy of istockphoto.com

Environmental management and employee safety

I **RECENTLY NOTICED** some of the good habits that my two assistants have instilled in the crew in regards to Personal Protective Equipment, such as checking over the equipment safety guards, oil levels and grease fittings. It occurred to me that this magazine would be a great vehicle to share valuable information about how employee safety is tied into sustainable environmental management.

Most environmental issues typically fall under the Environmental Protection Agency umbrella; but there is another organization that we have all heard of, the Occupational Safety & Health Administration (OSHA). Do we take it for granted or worse yet, do we give any thought?

OSHA's Code of Federal Regulations can help guide us to a safe workplace. We all have to follow these federal regulations. Here are a few CFR regulations that pertain to sports turf managers; see http://www.osha.gov/ to be in 100% compliance.

HAZARDOUS COMMUNICATIONS TRAINING

It is the law to give all of your employees the Right To Know Training annually with their signatures for record keeping and have Right To Know Station visible with Material Safety Data Sheets (MSDS) on all products current and up to date yearly. Your Right to Know Station should be located in a central location within your shop area. Train your employees to know where to find any MSDS for any chemical on a moment's notice. Also explain labeling for potential health hazards from single word labeling:

- **CAUTION** means the pesticide product is slightly toxic if eaten, absorbed through the skin, inhaled, or it causes slight eye or skin irritation.
- **WARNING** indicates the pesticide product is moderately toxic if eaten, absorbed through the skin, inhaled, or it causes moderate eye or skin irritation.
- **DANGER** means that the pesticide product is highly toxic by at least one route of exposure. It may be corrosive, causing irreversible damage to the skin or eyes. Alternatively, it may be highly toxic if eaten, absorbed through the skin, or inhaled. If this is the case, then the word "POISON" must also be included in red letters on the front panel of the product label.

You should train your employees to know how to react in case of a spill for health or the environment in a safe and productive way. Do you know what chemicals in your shop are labeled "Danger"? You might be surprised to find out that for most of us it is windshield washing fluid. For more information on MSDS training please go to http://www.osha.gov/html/faq-hazcom.html.

BLOOD BORNE PATHOGENS & HAZARDOUS SPILL TRAINING

Some preventable measures as indicated by OSHA include:

- Routine use of latex gloves or other precautions to prevent skin and mucous-membrane exposure when contact with blood or other body fluids is anticipated.
- If bleeding is profuse and requires the assistance of a supervising adult, latex gloves should be donned and pressure applied to the wound, keeping the injury above the level of the heart if possible. Medical care should be sought.
- Immediately wash hands and other skin surfaces if contaminated (in contact) with blood or other body fluids. Wash hands immediately after removing gloves.
- The bloodied portion of the athlete's uniform must be properly disinfected, or the uniform changed before the athlete may participate.
- Clean all blood-contaminated surfaces and equipment with a solution made from 1-100 dilution of household bleach or other disinfectant before competition resumes. Use a new mixture for each event, and discard the mixture after each event.
- Practice proper disposal procedures to prevent injuries caused by needles and other sharp instruments or devices found in the area of the field.
- Although saliva has not been implicated in HIV transmission, mouthpieces, resuscitation bags, or other ventilation devices should be available for use to minimize the need for emergency direct mouth-to-mouth resuscitation.
- Athletic trainers/coaches with bleeding or oozing skin conditions should refrain from all direct care until the condition resolves.
- Contaminated towels, dressings, and other articles containing body fluids should be properly disposed of or disinfected.

A spill of fuel, oil, pesticides or chemicals more than a gallon is classified as a hazardous spill. To avoid harm to health and environment you should train and document preventable measures for all kinds of spills. Also plan and prepare for the worst and hope it never happens. Maps indicating emergency exit routes for each building should be posted by the elevator and exits on each floor to aid you in locating emergency

TOP 11 national EPA VIOLATIONS

1. Waste label not properly filled out (on both sides, need complete information).
2. Weekly inspection of the satellite accumulation or main/central accumulation area NOT being performed.
3. Full container remaining in a satellite accumulation area for more than 3 days.
4. More than one container per waste stream (type of waste).
5. No impervious base (secondary container requirement). All waste containers must be stored in a compatible secondary container in order to contain spills.
6. Required annual training NOT documented (Hazardous waste and spill response training).
7. Open waste container.
8. Satellite accumulation area not under control of the staff generating the waste.
9. Spillage or leakage of waste (including contamination on the container).
10. Failure to determine waste as hazardous. (e.g., it is clearly waste like but there is no waste label.)
11. Satellite accumulation area NOT at or near the site of generation. (e.g., Not across or down the hall, or if it is, use secondary containers to transport.)

equipment, and in leaving the building during emergency evacuations. Also:]

• Notify your Emergency Coordinator and your neighbors for back up.

• Notify the Environmental Health and Safety Office (EHSO).

• Review MSDS and request additional advice from EHSO.

• Locate the spill kit and other needed material.

• Choose appropriate personal protection according to information given in MSDS.

• Wear chemical resistant gloves, safety glasses and/or a face shield.

• Wear a coverall and/or apron.

• Use appropriate respiratory protection if permitted to do so.

• Work in pairs, never work alone.

GENERAL SPILL CLEANUP PROCEDURES

• Apply the absorbing or neutralizing material to the spill according to the hazardous characteristics of the spilled substance.

• Work inward from the spill perimeter until the spilled material is covered.

• Scrape and sweep contaminated absorbing material into a dust pan, place in a sealed container.

• Wet mop contaminated area if spilled material is not water sensitive.

• Collect the spill clean up material in a leak proof container.

• Label container with a hazardous waste label as to its content (i.e. spill cleanup material & spilled compound name)

• Arrange with EHSO for pick up and appropriate disposal.

Have a spill response action plan for these types of emergency and protocol for employees to act in a safe and responsive way. Have spill kits readily available at gas and diesel pumps, pesticide storage lockers and within your shop maintenance area.

SAFETY

It is the responsibility of the sports turf manager and employer to provide safe working conditions for their employees. There are many parts to this CFR; however I have tried to simplify:

It shall be the responsibility of the employer to initiate and maintain such programs as may be necessary to comply with this part. Such programs shall provide for frequent and regular inspections of the job sites, materials, and equipment to be made by competent persons designated by the employers. The use of any machinery, tool, material, or equipment which is not in compliance with any applicable requirement of this part is prohibited. Such machine, tool, material, or equipment shall either be identified as unsafe by tagging or locking the controls to

render them inoperable or shall be physically removed from its place of operation, i.e. guards missing from mowers, weed eaters, edger's, grinders , etc. Any unsafe piece of machinery or parts missing shall be tagged and marked out of order. The employer shall permit only those employees qualified by training or experience to operate equipment

and machinery. This responsibility falls under the sports turf manager.

Personal protective equipment. Standards in this part require the employer to provide personal protective equipment (PPE), including respirators and other types of PPE, because of hazards to employees impose a separate compliance duty with respect to each employee covered by the requirement. The employer must provide PPE to each employee required to use the PPE, and each failure to provide PPE to an employee may be considered a separate violation. Training. Standards in this part require training on hazardous and related matters, such as standards requiring that employees receive training or that the employer train employees, provide training to employees, or institute or implement a training program, impose a separate compliance duty with respect to each employee covered by the requirement. The employer must train each affected employee in the manner required by the standard, and each failure to train an employee may be considered a separate violation.

The weather is forever changing; you can blame it on global warming or natural phenomena, but if one of your employees gets fatally sick from heat exhaustion or heat stroke, you might be investigated from OSHA and held accountable. Have precautions in place such as: more allowable breaks to cool down, and available water to prevent dehydration. Do your heavy workloads in the morning when it's a little cooler and more relaxed workloads in the afternoon when the sun is beating down with hot temperatures.

FLAMMABLE STORAGE & FIRE PROTECTION

Flammable liquid: Any liquid having a flash point below 100ºF, except any mixture having components with flashpoints of 100ºF or higher, the total of which make up 99 percent or more of the total volume of the mixture. Flammable liquids shall be known as class I liquids. Class I liquids are divided into three classes as follows: Class IA shall include liquids having flash points below 73ºF and having a boiling point below 100ºF; Class IB shall include liquids having flash points below 73ºF and having a boiling point at or above 100ºF; and Class IC shall include liquids having flash points at or above 73ºF and below 100ºF.

The turf manager needs to have a fire protection plan for all his areas of responsibility. The employer shall provide portable fire extinguishers and shall mount, locate and identify them so that they are readily accessible to employees without subjecting the employees to possible injury. Only approved portable fire extinguishers shall be used to meet the requirements of this section.

The employer shall assure that portable fire extinguishers are maintained in a fully charged and operable condition and kept in their designated places at all times except during use. The employer shall distribute portable fire extinguishers for use by employees on Class A fires so that the travel distance for employees to any extinguisher is 75 feet or less. The employer shall be responsible for the inspection, maintenance and testing of all portable fire extinguishers in the workplace.

At least two exit routes must be available in a workplace to permit prompt evacuation of employees and other building occupants during an emergency. The exit routes must be located as far away as practical from each other so that if one exit route is blocked by fire or smoke, employees can evacuate using the second exit route.

INJURY REPORTS

The purpose of this rule is to not only protect the worker, but to protect your company as well. Worker compensation frauds cost companies and insurance groups a lot of money, having documented records on file can aid in any investigation for fraud claims or law suits. If your company had 10 or fewer employees at all times during the last calendar year, you do not need to keep OSHA injury and illness records unless OSHA informs you in writing that you must keep records. However all employers covered by the OSH Act must report to OSHA any workplace incident that results in a fatality or the hospitalization of three or more employees. If your company had more than 10 employees at any time during the last calendar year, you must keep OSHA injury and illness records unless your establishment is classified as a partially exempt industry.

REASONS FOR OSHA INSPECTIONS

This information courtesy of James B. Meehan, PE, CSP, Iowa State: Don't wait for an incident to occur to take action on a CFR to be in compliance, this will not help you, the damage is already done. Have someone from your crew to volunteer as a safety officer and help aid you in finding deficiencies and correcting them. Remember to document everything and file it accordingly, this can only help you in an event that some unfortunate incident happens, you are well covered with documentation training, PPE employee issues, etc. There are several ways you might find yourself getting inspected, however, the most common are:

Imminent danger: Allegations of an imminent danger situation will receive highest priority. The inspection will be conducted within 24 hours of notice of the imminent danger to OSHA unless extraordinary circumstances exist.

Fatality and catastrophe: Accidents will be investigated if they include any of the following conditions:

One or more fatalities;

Three or more employees hospitalized for more than 24 hours;

Significant publicity.

Program inspections based upon Federal OSHA priorities.

Employee or ex-employee complaint: Complaints are investigated by inspection or by letter. If OSHA formalizes the complaint by a letter, your letter reply to the complaint is a serious report, not to be taken lightly. Complaints to OSHA that are signed by an employee will always result in an inspection. The inspection, however, may be limited to the items in the complaint.

Programmed inspection: OSHA policy requires that programmed inspections will be conducted in industries where OSHA expects to achieve a significant impact or has targeted specific hazards.

Follow-up inspection: OSHA can re-inspect to assure that an employer has abated the violations that have been cited. Fines are usually approximately ten times higher for "Failure to Abate" citations.

TIPS TO HELP YOU GET IN COMPLIANCE

From the point of view of the OSHA inspector:

Don't make me wait. It just tells me you're not ready. Nothing you can do at the last minute is going to make much dif-