Be Aware of Playing Field Liability - Fertilizers, Herbicides & Pesticides

Michael Goatley, Jr.
Professor and Extension Turfgrass Specialist
Virginia Tech
goatley@vt.edu
My goals today

• Detail some of the basic legalities with regards to pesticide and fertilizer applications on athletic fields

• Consider some of the most basic mistakes made regarding the selection, storage, application, and use of fertilizers and pesticides in sports field management as related to field safety AND someone’s liability and provide some basic strategies to avoid these mistakes

• Provide my educated guess as to where we are headed regarding regulations with fertilizers and pesticides

• Briefly touch on where we are/where we might be headed regarding surface hardness measurements
I wish there were easy answers to questions regarding pesticide and fertilizer laws across the board, but the reality is:

It Depends
Some questions for you to answer-

• IF you apply fertilizer and pesticide applications ‘in-house’, do your field managers
  • have specific training in sports field management that applies to your climate, your facility needs, your budget etc.?
  • have the necessary licenses/certificates to effectively manage turf in an environmentally responsible manner when it comes to fertilizer and pesticide applications?
  • have the necessary equipment and/or facilities etc. to properly store, handle, and apply fertilizers and pesticides?
  • maintain organized and easily accessible records?
If you answered ‘NO’ to any of these previous questions, perhaps you should: 1) consider hiring someone with demonstrated sports turf management skills to do it ‘in house’ or to 2) outsource the application of pesticides and fertilizers (at a minimum) to a licensed contractor, especially a firm with sports turf management expertise.
Licensed commercial applicators assume:

- The liability of making recommended/regulated pesticide and fertilizer applications
- The responsibilities and liability of transport of the products
- The responsibilities and liability of storing the products
- EACH one of these areas has specific legal requirements
What are some of the basic ‘must do’s’ about pesticides and fertilizers for those that treat in-house?
A ‘real world’ concern is the visibility (literally) of a pesticide or fertilizer application in relation to when applications are being made and who is around. It often does not matter that materials are being applied appropriately... the problem is that something is being applied – period.
Are synthetic chemicals inherently bad? Of course NOT!

Keep in mind how a pesticide or fertilizer application is often perceived by the general public.
Show of hands… How many of you are guilty of this?

Would you do this with a jug of Roundup? Guess which one is more toxic?
Typical minimal requirements for pesticide applicators: Who Must be Certified? (these are from Virginia)

Private Applicators
- Apply restricted use pesticides
- Produce an agricultural commodity
- Apply pesticides on their own land or that of their employer

Commercial Applicators (For Hire)
- Use any pesticides on others' property in exchange for compensation
- Must work for a company with a Pesticide Business License

Commercial Applicators (Not for Hire)
- Use any pesticides as part of job duties, on property owned or leased by them or their employers
- Use pesticides as a government employee
- Use pesticides on any area open to the general public at the following establishments: educational institutions, health care facilities, day-care facilities, convalescent facilities
- Use pesticides where open food is stored, processed or sold
- Use pesticides on any recreational land over five acres

Registered Technicians
- Operate under the supervision of a commercial applicator when applying restricted-use pesticides
- Have not completed the requirements for commercial certification
- Can apply general use pesticides without supervision
Sports Turf Managers Association
Environmental laws and regulations inventory

Methodology
State and federal laws and regulations covering pesticide and fertilizer licensing/certification, pesticide and fertilizer use, school IPM, integrated pest management, and water use and quality were researched for their applicability to the management of sports.

The quality and availability of relevant state information varies greatly. Information on all topics is not available for all states because not all states have laws or regulations regarding each of the topic areas. Where possible, the information is linked directly from the state lawmakers. Some information is linked from information sources officially designated by the state or its agencies.
**Alabama**

Alabama Pesticide Regulations

Alabama Pesticide Laws

Applicator License FAQs

State Water Withdrawal
Administrative Code: *Declarations of Beneficial Use (Ala. Admin. Code. r. 305-7-10-.01-.07 (1994))*

**Alaska**

Pesticides: School use and notification (18 AAC 90.625)
[http://www.legis.state.ak.us/basis/folioproxy.asp?url=http://wwwwinu01.legis.state.ak.us/cgi-bin/folioisa.dll/aac/query={JUMP:'18+aac+90!2E625'}/doc/{@1}/hits_only?firsthit](http://www.legis.state.ak.us/basis/folioproxy.asp?url=http://wwwwinu01.legis.state.ak.us/cgi-bin/folioisa.dll/aac/query={JUMP:'18+aac+90!2E625'}/doc/{@1}/hits_only?firsthit)

Alaska State Pesticide Regulations
[http://www.legis.state.ak.us/basis/folioproxy.asp?url=http://wwwwinu01.legis.state.ak.us/cgi-bin/folioisa.dll/aac/query={group+title18chap90!3A}/doc/%7B@1%7D/hits_only](http://www.legis.state.ak.us/basis/folioproxy.asp?url=http://wwwwinu01.legis.state.ak.us/cgi-bin/folioisa.dll/aac/query={group+title18chap90!3A}/doc/%7B@1%7D/hits_only)

Alaska IPM Program
[http://www.uaf.edu/ces/ipm/](http://www.uaf.edu/ces/ipm/)

Alaska DEC Factsheet: Pesticide Use in Schools
[http://dec.alaska.gov/eh/docs/pest/Pesticide%20Use%20at%20Schools.pdf](http://dec.alaska.gov/eh/docs/pest/Pesticide%20Use%20at%20Schools.pdf)
At the federal level, the two agencies of primary concern to you and your facility when it comes to pesticide applications are:

- Environmental Protection Agency
- Occupational Safety and Health Administration
The Label is the LAW

• The pesticide product label is a binding legal agreement between three parties:
  • the US Environmental Protection Agency,
  • the product registrant, and
  • the product user.
Label vs. Safety Data Sheets

• FIFRA (EPA) vs. HazCom (OSHA)
  • Legal status
    • Label = FIFRA
    • SDS = OSHA

• IF there are differences between the SDS and the label...for example, in PPE (Personal Protective Equipment) requirements, applicators follow the LABEL!
Some of the most common mistakes where labels are violated when it comes to sports fields 1) the re-entry (or restricted entry) interval (REI) following a pesticide application... In this case the workers.
In this case the REI considers the field users too.
2) failure to wear appropriate Personal Protective Equipment (PPE)
PPE Violations

Even Roundup requires long shirt, long pants, socks, and shoes
3) Another part of Labels that is frequently ignored: Storage and/or Disposal

Labels will give you specific directions about storage conditions (*ex. temperature*) and even security requirements:

**Storage:** Store in a cool, dry place. Keep containers tightly closed when not in use. Store in temperatures above freezing and below 32°C (90°F).

**Storage:** Store in a cool [59°-86°F (15°-30°C)], dry place.

**STORAGE AND DISPOSAL**

**Storage:** Store pesticide products in a *secure locked area* where children, unauthorized persons and animals cannot enter. Do not store in the same area with food or feed. *Do not store opened containers.*
Record Keeping is a MUST for Pesticide Applications and a Requirement in Some States for Fertilizer Applications

<table>
<thead>
<tr>
<th>Name, Address, Phone</th>
<th>Applicator Name &amp; Certificate #</th>
<th>Date of Application</th>
<th>Target (ie, plant, crop, animal or site)</th>
<th>Pesticide Name and EPA Reg. #</th>
<th>Principal Pests Controlled</th>
<th>Acreage, area, # of plants, animals treated</th>
<th>Amount of Pesticide Concentrate and Diluent Amount</th>
<th>Application Equipment Used</th>
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Is there any way to essentially eliminate pesticide storage issues?

• Yes. The technique requires some planning AND you might not get the best price for your purchase, but one highly effective strategy is to:

Purchase ‘for the job’
Any requirements for fertilizer applicators?

• Not nearly as regulated at present as Pesticide Certification, but expect its importance to grow with EPA focus on regulating/cleaning/improving the health of water resources

• Virginia, Maryland, New Jersey, and Florida all have certification programs that I am familiar with. I am sure there are others.

• Most certification programs require commercial applicators to be certified (might have a minimum number of acres they treat)

• In Virginia, all state-owned lands (for instance, that includes universities like Va Tech, UVa, JMU, ODU etc) now require Nutrient Management Plans for all their different grounds (including athletic fields) written by a certified nutrient management plan writer.
Where we might be headed.

“All politics is local.”

And if not there yet, some local politics might be impacting your sports fields before too long.
Notification Laws. These are highly state/locale dependent. Many states do not have firm notification laws and the activity is a ‘courtesy’. Some states (like this from New Jersey) are very intensive.

7. 72 Hour Notification and Posting: The school must provide prior notice and post signs before the use of any pesticide (except that notification and signs are not needed when low impact pesticides as defined by the law are used). The notice must be given at least **72 hours** before the pesticide application to all staff and parents or guardians of students enrolled at the school. Additionally, **signs must be posted** at least 72 hours before the pesticide application. These requirements apply when school is in session. During holiday periods or during the summer months when school is not in session, only staff and the parents or guardians of students using the school in an authorized manner need to be notified.

The notice to staff and parents or guardians may be by:

- Written note that the student takes home;
- Written note mailed at least one week prior;
- Phone call;
- Direct contact;
- Electronic mail.

The posted notice requirements are:

- Signs must be posted in or adjacent to area of the pesticide application
- Signs must also be posted at each entrance to the building or school ground being treated with pesticides
- The sign must be posted from 72 hours before to 72 hours after the application
- The size of the sign must be at least 8.5 inches by 11 inches

**Communication with the pest control professional is essential** for obtaining all necessary information about the planned use of pesticides. Name and EPA Registration number of pesticides to be used, dates and times for the pesticide use, pesticide product labels, and Material Safety Data Sheets (MSDS) be available from the pesticide applicator. Since the notices and signs in pesticide label precautions that relate to public safety, and possible xx from the MSDS, EPA C, and other sources of information, check with...
MoCo becomes first major locality to ban cosmetic pesticides from lawns

By Bill Turque  October 6  Follow @bturque

Montgomery County became the country’s first major locality Tuesday to ban the use of cosmetic pesticides on private lawns, concluding that the time-honored right of suburbanites to maintain pristine green, weed-free yards was superseded by a body of scientific evidence linking the widely-used products to cancer.

After three hours of sometimes emotional debate, which included members recounting their own personal and family experiences with cancer, the County
Five things to know about Montgomery County’s cosmetic pesticides ban

3. The county parks department sounds as if it couldn’t be less enthusiastic about pesticide-free playing fields. “We’ll try,” director Mike Riley said Tuesday in discussing the organics pilot program mandated by the bill. Riley has maintained that organic turf management would not be effective on heavily used athletic fields in the wet Mid-Atlantic region. The department is supposed to produce a plan to make the county’s nearly 300 playing fields pesticide-free by 2020. Look for this dispute to continue, especially if Leventhal becomes the next county executive.
The paradox of going pesticide-free on sports fields for ‘safety reasons’:

At some point, field safety might be compromised.
Large Crabgrass, White Clover, and Hybrid Bermudagrass Athletic Field Playing Quality in Response to Simulated Traffic

J.T. Brosnan, K.H. Dickson, J.C. Sorochan, A.W. Thoms, and J.C. Stier

Author Affiliations

Abstract

Athletic field playing quality encompasses both aesthetics as well as athlete-to-surface interactions that can affect injury incidence. Legislation restricting the use of herbicides on athletic fields may lead to increases in problematic weeds, such as large crabgrass (Digitaria sanguinalis L.) and white clover (Trifolium repens L.), which could reduce athletic field playing quality and potentially increase potential for athletic injuries. Research was conducted at the University of Tennessee Center for Athletic Field Safety (Knoxville, TN) during 2012 to 2013 to evaluate the playing quality of large crabgrass and white clover compared with weed-free hybrid bermudagrass (C. dactylon × C. transvaalensis Burtt-Davy, ‘Tifway’). All plots (3 by 3 m) were maintained as monostands and subjected to 18 simulated traffic events with a Cady traffic simulator each autumn over 2 yr. Large crabgrass and white clover lost green cover approximately 12 times faster than hybrid bermudagrass in this study. Consequently, surface hardness values on large crabgrass and white clover plots were ~48 to 52% higher than those measured on hybrid bermudagrass after 18 simulated traffic events were applied. Changes in both surface hardness and rotational resistance were significantly correlated ($P < 0.0001$) to changes in green cover following simulated traffic. Our findings indicate that groundcover dominated by weeds, such as large crabgrass and white clover, compromises the aesthetics and safety of natural grass athletic fields. Additional research is needed to evaluate athletic field playing quality on polystands of hybrid bermudagrass, large crabgrass, and white clover to determine acceptable thresholds of weed cover for player safety. Information of this nature would be useful for justifying various weed control measures such as herbicide applications.
Allowable Herbicides for Schools & Day Care Centers

Allowable herbicides (Do not need emergency application approval)

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Active Ingredient(s)</th>
<th>Parent company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ecosmart Weed &amp; Grass Killer</td>
<td>2-Phenethyl Propionate, eugenol</td>
<td>EcoSMART</td>
</tr>
<tr>
<td>Burnout II Weed &amp; Grass Killer</td>
<td>Citric acid &amp; clove oil</td>
<td>St. Gabriel Organics</td>
</tr>
<tr>
<td>Weed Zap</td>
<td>Cinnamon oil, clove oil</td>
<td>JH Biotech Inc.</td>
</tr>
<tr>
<td>C-cide</td>
<td>Citric acid</td>
<td>Biological Solutions</td>
</tr>
<tr>
<td>Brush, Weeds, and Grass Herbicide</td>
<td>Citric acid</td>
<td>Greenergy</td>
</tr>
<tr>
<td>Matratec</td>
<td>Clove oil</td>
<td>Brandt</td>
</tr>
<tr>
<td>Matran EC</td>
<td>Clove oil</td>
<td>EcoSmart Technologies</td>
</tr>
<tr>
<td>Phydura</td>
<td>Citric acid, malic acid, clove oil</td>
<td>Soil Technologies Corporation</td>
</tr>
<tr>
<td>Several brands available</td>
<td>Corn gluten meal</td>
<td>Several vendors</td>
</tr>
<tr>
<td>ADIOS</td>
<td>Sodium chloride</td>
<td>Herbanature</td>
</tr>
</tbody>
</table>
How do we attempt to manage challenges on pesticide-free sports fields?
Seed Banking

Picture: This area is overseeded weekly with Perennial ryegrass during fall season (Aug 15 to Oct 15, a total of 10 weeks of seeding) at rates indicated in the slide.

2 lb PR/M (20) 6 lb PR/M (60) 10 lb PR/M (100)

Final cover
2 lb = 60%
6 lb = 78%
10 lb = 75%

From: Chinery & Rossi, Cornell

Fast germinating grasses like perennial ryegrass or tall fescue allow for ‘seed banking’ to be employed. Ignore the calendar and just keep putting out small amounts of seed on trafficked turf throughout the periods of play.
Alternative grassing options. Don’t let its dormancy phase fool you: bermudagrass, even as a dormant surface, is a great playing surface if it fits your climate.
Balanced approaches work well on sports fields

• Integrated Pest Management (IPM)
  • Assess and confirm the pest problem, determine why the problem is occurring, correct underlying shortcomings in site/soil etc., apply an appropriate pesticide IF warranted
  • Keep detailed records of conditions etc. to aid in future decision making

• Best Management Practices (BMPs)
Best Management Practices (BMPs)

• Includes IPM approaches but expands to a more holistic strategy in sports turf management
• Improve soil and site conditions with appropriate amendments and cultural programs (mowing, aeration, use of compost amendments where suitable etc.)
• Consider the grass selection – do you have the best grass for your site and field use needs?
• Do you have a nutrient management plan based on recent soil test results?
• Do you have the ability to better manage/regulate field use, especially when soils are wet?
Fortunately, we have come a long way in our use, handling, and respect of pesticides!
Surface Hardness – Gmax Testing

- Concussions
- $1G =$ acceleration due to gravity
- How many $G$’s can the surface absorb?
- How much returned to athlete?
ASTM F355 – Test Method

- F355 Device
  - Drop weighted missile from standard height
  - Accelerometer in missile measures impact
Other Gmax tests

- Clegg Impact Tester
- ASTM F1702 – Natural Turfgrass
- 5 lb missile, drop height: 18 inches
- Gmax values are lower than F355 (200 = 135)
Why Do Fields Get Hard?

• Compaction?

• Lack of maintenance?

• Paint build-up?

• “Walk-off” infill?
Top Dressing Infill Material
NFL Standards – Impact Hardness
Surface Testing - Hardness

- Test locations
- Characterize field with 10 drop locations
- Inlays and seams
- All spots on field must be under 100
Experts on the Field, Partners in the Game.
Annual STMA Conference

- January 19-22, 2016
- San Diego, California
- A Conference to Revolutionize Performance: Yours and your Fields
Education Sessions

• Learn best management practices from academics and industry experts through case studies, hands-on, speed sessions, traditional presentations, and in-depth classes

• 54 education sessions broken out into 9 educational tracks
  • Agronomic
  • Pest control
  • Water
  • Professional Development
  • Research
  • Facility Management
  • Construction/Renovation
  • Industry Developments
  • Sustainability
Feature Speaker

- Timothy Gay, Ph.D. – University of Nebraska
- Turf, Sports, Physics, Concussions, and the Kitchen Sink
  - Discussion of the basic physics of turf impacts, and the role it plays in the current debate over concussions.
Opening General Session

- Focuses on Injury Biomechanics from the industry’s leading experts

Daniel Russell, Ph.D. – At the Crack of the Bat – The Science of Wood Baseball Bats

Richard Kent, Ph.D. – Shoes and Surfaces: Partners in the Reduction of Injury Risk for Elite Athletes

F. Scott Gayzik, Ph.D. - Virtual Human Models for Biomechanics of Injury Mitigation and Prevention
Trade Show

- The Exhibition features distributors, company representatives, and product developers showcasing new products, equipment, and technology specific to the sports field industry
- Sold out for 2016 – Nearly 200 booths
Thank you for the opportunity to present. If you don’t know your state turfgrass extension specialist(s) or national or chapter members of STMA, I encourage you to meet them!

Facebook: Virginia Turf

Twitter: @vaturf