

**Report to the Joint Standing Committee on  
Education and Cultural Affairs  
And the Joint Standing Committee on  
Agriculture, Conservation and Forestry  
126<sup>th</sup> Maine State Legislature**

**Pursuant to Resolve 2013, Chapter 63,  
Regarding Pesticide Applications and Public  
Notification in Schools**

**Submitted by The Commissioner of Education and  
The Department of Agriculture, Conservation and  
Forestry, Board of Pesticides Control  
March 15, 2014**

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# **PROPOSED STANDARDS AND GUIDELINES RELATED TO SCHOOL GROUNDS CONSTRUCTION TO MINIMIZE THE USE OF PESTICIDES ON SCHOOL GROUNDS—FOR NEW CONSTRUCTION**

## **SECTION I: INTRODUCTION**

During the 125<sup>th</sup> and 126<sup>th</sup> Maine Legislatures, two separate bills were introduced which would have functionally banned the use of pesticides on school athletic fields and grounds. While the Legislature did not enact either bill, they illustrate that there is a continuing concern about pesticide use in close proximity to children. Moreover, there is credible science indicating the children are more vulnerable to exposure from environmental toxicants. Accordingly, the public interest is best served by minimizing childhood exposure to pesticides.

A comprehensive assessment<sup>1</sup> of Maine's School Integrated Pest Management rule (CMR 01-026, Chapter 27) in 2011 found that Maine schools are effectively minimizing the use of pesticides around children. Following that review, some improvements were made to the rule, and Best Management Practices (BMPs) for school lawns, playgrounds and athletic fields were developed to further assist schools in achieving that goal.

Resolve 2013 Chapter 63 Regarding Pesticide Applications and Public Notification in Schools directed the Departments of Education, and Agriculture, Conservation and Forestry to develop standards and guidelines related to school grounds construction that would minimize the occurrence of pest problems. These guidelines will complement Maine's School Integrated Pest Management rule and serve to minimize pesticide risks for Maine's school population.

Because implementation of many of these practices will be limited by cost constraints, these standards and guidelines are intended to be strictly voluntary. They are not intended, nor should they be construed as, a basis for mandatory requirements.

## **SECTION II: STANDARDS**

- Grounds are safe for intended purpose. Grounds meet all applicable safety standards.
- Grounds are designed to minimize pest problems.
- Grounds are an attractive and functional space that supports learning, physical fitness and community engagement.

## **SECTION III: GUIDELINES**

### **Planning**

- Determine school community priorities for intended usages of new school grounds
- Build knowledge base. Learn which pests are common in the area. Learn how site selection and choice of materials, soils and plant cultivars can affect plant health and pest susceptibility.

- Analyze physical context of proposed constructions such as slope, aspect, drainage, proximity to environmentally sensitive sites such as wildlife habitat or streams, proximity to buildings, available irrigation water source, and access.
- Design for natural pest tolerance. Select plants and cultivars suited for the intended site and use. Design grounds to minimize potential pest harborage. Avoid plants attractive to common human health pests such as rodents and stinging insects. Design lighting and drainage features to avoid pest problems. Design grounds to keep pests from entering buildings. Designs should include installation of weed barriers under fencelines and at the edges of hardscapes such as tracks, walkways and parking areas. Design to keep vegetation at least 2 feet away from buildings, even when plants reach mature size. Avoid planting dense shrubs, trees, and ground covers that pose a security/safety risk or potential pest harborage. Avoid planting trees that will overhang buildings at maturity. Design to provide adequate sunlight for optimal plant growth in turf, gardens and other landscaped areas.
- Assess equipment and staffing needed to maintain the planned construction. Develop a maintenance plan that includes schedules and plans for pest monitoring, soil testing, fertilization and soil amending, mowing and trimming, irrigation, aeration, equipment maintenance, record-keeping and assessment.

## **Design and Construction**

### 1. Athletic Fields

- Follow authoritative guidelines and applicable standards for design and construction.
- Design site to ensure turf is very well-drained. Design surface grades and, if necessary, subsurface tile lines for rapid drainage of excess water. Consult authoritative guidelines for recommended soil and seed-bed specifications. Avoid using native soils. Increase soil particle size (up to 75% sand) and incorporate organic material (finished compost) to a depth of at least 8 inches, but preferably 12 inches and avoid the formation of soil layers. Organic content should be 4% minimum, 6% desirable. Loam should be screened through a 3/8 inch screen. Require loam be tested for compliance with the State Arsenic Guidelines. Use admixtures if necessary to lower the average arsenic value. Contractor should supply several gradation analyses of the loam after admixtures have been blended with loam. Ensure soil is free from herbicide residues and noxious weed seeds.
- Properly crown fields constructed from natural soil or modified soil to ensure excellent surface drainage without interfering with play.
- Avoid the use of equipment that will over-compact the sub-grade and loam. Reduce compaction with deep tine aeration, tilling or harrowing before seeding.
- Seed the field in late summer, 15 August – 15 September. Avoid spring seeding or use sod. Plant seed mixtures known to be hardy for the hardiness zone. Consider planting a seed mixture that contains at least three different turf-type, endophyte-enhanced, tall fescue varieties to improve draught tolerance, and insect and disease resistance (Minimum of 7 pounds/1000 sq. ft.), or plant a mix of 80% improved Kentucky bluegrass (at least two varieties) and 20% endophyte-enhanced perennial ryegrass (one or two varieties). (Minimum of 4 pounds/1000 sq. ft.)

- Seeding should be done bi-directionally in areas where mechanical seeders can be used. In other areas, it is recommended the seed be raked into the soil. If adding organic mulch after seeding, use straw mulch, not hay mulch, to avoid introduction of weed seeds. Provide irrigation water source and capacity to apply at least one inch of water per week to the entire field area.
- Construct skinned areas using a combination of sand, silt and clay (sandy loam). Most recommendations are for a 60:20:20 of sand, silt, clay.
- Grade skinned areas on base paths or infields to drain towards the outfield with a 0.5% slope.
- Use authoritative guidelines to develop a pest monitoring and management plan for anticipated pests such as grubs and broadleaf weeds.
- Avoid planting trees in proximity to lighted fields. Night-illuminated trees can attract invasive turf-damaging insects such as European chafer.
- Retainage should be adequate to have the areas reseeded and turf established until turf acceptance. If substantial completion of the project is requested before turf is established, a special withholding of \$50.00 per 1,000 square feet should be made until turf establishment has been obtained. Require turf establishment defined as either:
  - a. There are no bare spots over 72 square inches or
  - b. There are no bare spots which exceed 2 square feet in any 10x10 foot area.
- Develop plan for regular turf quality and performance evaluation.

## 2. Hardscapes and Fencelines

- Follow authoritative guidelines and applicable standards for design and construction.
- Install weed barriers under and at edges of walkways, fencelines and tracks.

## 3. Playgrounds

- Follow authoritative guidelines and applicable standards for design and construction.
- Select equipment that minimizes pest access, habitat and harborage. Avoid equipment that can collect water. Avoid equipment with hollow or hidden spaces used for nest-building by stinging insects.
- Select plantings that do not attract pests. Avoid fruit- and berry-producing plants that attract rodents and stinging insects. Avoid linden trees (they are very attractive to bees and Japanese beetle).

## 4. Gardens and Ornamental Plantings

- Select plants and cultivars suited for the intended site and use.
- Design to provide adequate sunlight for optimal plant growth.

- Avoid plants and features such as dense shrubs and ground covers that can harbor pests. Separate the canopy of densely growing plants from one another and from buildings by a distance of 2 feet or more.
- Select plants that shed a minimum of seeds and fruits that may attract and support insects, rodents, and undesired birds.
- Design lighting and drainage features to avoid pest problems. Trees that are illuminated at night by lights can attract turf-damaging insects.
- Design to ensure at least 10 feet of clearance is maintained between exterior walls of buildings and tree branches, as trees grow to maturity, to prevent squirrels and rats from entering buildings.
- Install crushed stone or pea gravel around building perimeter to discourage pests from entering buildings. Keep bark mulch, grass and plants away from buildings.

#### SECTION IV: SOME RESOURCES FOR AUTHORITATIVE GUIDANCE AND STANDARDS

- Pennsylvania State University:  
<http://plantscience.psu.edu/research/centers/turf/extension/factsheets/athletic-fields>.
- American Sports Builders Association: <http://www.sportsbuilders.org/fields/guidelines.cfm>.
- Sports Turf Managers Association (STMA): Standards and guidelines for field construction.
- ASTM International: Standards for design and construction of athletic fields and other design features. <http://www.astm.org>
- Pulhalla, J., J Krans, and M. Goatley. 2010. Sports Fields: Design, Construction, and Maintenance. 528 pp. John Wiley and Sons publisher.

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<sup>1</sup>Report to the Joint Standing Committee on Agriculture, Conservation and Forestry, 125<sup>th</sup> Maine State Legislature pursuant to Resolve 2011 Chapter 59 To Enhance the Use of Integrated Pest Management on School Grounds, Submitted by the Maine Board of Pesticides Control, February 1, 2012 and Report to the Joint Standing Committee on Agriculture, Conservation and Forestry, 126<sup>th</sup> Maine State Legislature pursuant to Resolve 2011 Chapter 59 To Enhance the Use of Integrated Pest Management on School Grounds, Submitted by the Maine Board of Pesticides Control, February 1, 2014