

**Report to the Joint Standing Committee on
Agriculture, Conservation and Forestry
125th Maine State Legislature**

**In Response 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**

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SECTION I: EXECUTIVE SUMMARY

In the early 1990s, scientific studies indicated that children are more susceptible than adults to the risks of exposure to environmental toxins. As a result, policy makers began instituting measures to reduce childhood exposure to pesticides and other potential toxins. Regulating the use of pesticides in the school environment quickly became a central component of that effort. Twenty-three states have adopted requirements for schools to institute Integrated Pest Management (IPM), which is widely accepted as the most cost-effective and least-risk approach to managing pests.

Maine's School IPM rule has been in effect for nine years. A comprehensive assessment of the rule indicates that it has been very effective in improving the way Maine schools manage pests, thereby reducing risks of childhood exposure to pesticides. Training for school staff has been central to these successes. The assessment also revealed some areas where improvements can be made to both the regulation and the state's implementation methodology.

Key recommendations include:

- Reduce the administrative burden on schools by consolidating recording keeping and eliminating an annual notice to parents.
- Strengthen the school IPM coordinator's pest management decision-making authority within the school organization.
- Provide ongoing training to all IPM coordinators.
- Work with stakeholders to improve Chapter 27 in the areas of communication, record-keeping and notification.

SECTION II: INTRODUCTION

What is Integrated Pest Management?

IPM is a widely accepted approach to protecting people and the environment from pests that relies on prevention, monitoring and proper identification of pests, combined with biological, cultural and physical controls, and, when needed, pesticides. In schools, sanitation and maintenance are key IPM strategies for keeping buildings pest-free, while good horticultural practices, such as proper mowing, irrigation, mulching, hand weeding and fertilization are central to managing pest problems on lawns, playgrounds and athletic fields.

Why IPM at schools?

In 1993, the National Research Council (NRC) published recommendations for limiting children's exposure to environmental toxins and changing the way risk assessments are performed.¹ The NRC cited the following reasons as a basis for its recommendations:

- Age-related variation in susceptibility and toxicity:
 - Immature metabolic pathways, which may render a child less able to process and excrete toxic chemicals;
 - Critical windows of vulnerability, during which children's systems and organs are developing and are more susceptible to interference from toxic chemicals.
- Age-related differences in exposure:
 - Childhood behavior patterns that tend to increase dermal and oral exposure, such as playing on the floor or ground, and putting things in their mouths;
 - Proportionally higher exposure rates, meaning children are exposed to higher relative doses of chemicals due to their smaller body size and their tendency to consume proportionally higher quantities of certain foods.

Recognition of these risk factors, coupled with the fact that children spend a high percentage of their time in a school environment, has led policy makers to promote reduced-risk pest management practices at schools. Moreover, research indicates that a thorough IPM approach can also reduce health impacts associated with indoor pest populations.² In 1991, Texas became the first state to mandate the use of IPM in public schools. The law was prompted by a high-visibility school pesticide misuse case involving a treatment intended to control head lice (pesticide application is not recommended for head lice control). The US Environmental Protection Agency (EPA) began providing funding to support school IPM activities in 1996 and, by 2011, 23 states had adopted school IPM laws.

Maine's school IPM rule

In 2001, the Maine Board of Pesticides Control (BPC) was petitioned by a public interest organization to initiate rulemaking governing pesticide use in schools. The BPC established a stakeholder group comprised of representatives ranging from school superintendents and maintenance directors to local pest control businesses and citizen interest groups. Following a consensus-based rulemaking process, this group led the development of Chapter 27: Standards for Pesticide Applications and Public Notification in Schools. The final rule was adopted in

¹ Pesticides in the Diets of Infants and Children (Washington, D.C.: National Academy Press, 1993).

² Nalyanya, G., J. C. Gore, M. Linker, and C. Schal. "German Cockroach Allergen Levels in North Carolina Schools: Comparison of Integrated Pest Management and Conventional Cockroach Control." Journal of Medical Entomology 46(3) 2009: 420-427.

2002, following public hearings and a public comment period. Chapter 27 became effective in 2003 and was revised slightly in 2005 and 2007 (*see Appendix 1*).

Maine's School IPM rule promotes the use of non-pesticide control options, pesticide formulations with a lower risk of exposure such as baits and gels, and lower risk application methods such as crack-and-crevice treatments. It discourages the use of broadcast pesticide applications with a high exposure potential. Formulations and procedures that pose higher risks of human exposure require advance notice to school occupants. The rule further requires schools to designate an employee as an "IPM Coordinator" and requires maintenance of certain records intended to verify that IPM practices are being implemented.

Resolve 2011, Chapter 59

In June 2011, Governor Paul LePage signed into law Resolve 2011, Chapter 59, To Enhance the Use of Integrated Pest Management on School Grounds (*Appendix 2*). The resolve resulted when lawmakers voted to amend LD 837, a bill that would have essentially banned the use of pesticides on school grounds, into a directive to the BPC to evaluate the effectiveness of its current rule. The resulting resolve assigned the following three principle tasks to the BPC:

1. Develop best management practices (BMPs) for school lawns, playgrounds and athletic fields;
2. Assess compliance with BPC rule Chapter 27; and
3. Report to the Joint Standing Committee on Agriculture, Conservation and Forestry:
 - a. By February 1, 2012 including BMPs, findings from the assessment and recommendations for minimizing the use of pesticides in schools and on school grounds.
 - b. By February 1, 2014 on continuing efforts to educate and work with schools to minimize the use of pesticides.

The BPC has been working on these assignments since the resolve was signed. This report details the BPC's efforts to address the tasks outlined in the resolve and fulfills requirement 3a above.

SECTION III: ACTIONS TAKEN

Development of best management practices for school lawns, playgrounds and athletic fields

A diverse *ad hoc* committee (*Appendix 3*) was established, including school, pest management, public health and environmental professionals. A set of best management practices (BMPs) was drafted by the Maine Department of Agriculture, Food and Rural Resources (MDOA), after extensive review of school and turf BMPs developed primarily, but not exclusively, by

specialists at school IPM and turf IPM programs at universities, such as the University of Massachusetts, Iowa State University, University of Minnesota, Cornell University, Ohio State University and Rutgers University. A sample turf maintenance schedule originally developed by University of Minnesota-based turf specialists, and later adapted for schools in Iowa (by University-based school and turf IPM specialists), was used as a basis for the Maine School Grounds BMPs. These BMPs were selected because they represent the best available, science-based recommendations for school turf and grounds in northern states. They were then reviewed by staff and the *ad hoc* committee and revised, based on the latest turf management recommendations for the northeast. The BMPs were also shared with Maine Educational Plant Maintenance Association members (school IPM coordinators and facilities directors), the Maine IPM Council and selected northeast regional university turf experts. Comments were analyzed and incorporated by the BPC, as appropriate. *See Appendix 4*, for the complete BMPs.

BPC review of EPA risk assessments for pesticides labeled for use on school turf areas

As part of the BPC's efforts to develop BMPs for school grounds and athletic fields, the staff toxicologist conducted a comprehensive analysis of the EPA's risk assessment data for toddlers to treated turf for pesticides registered in Maine and labeled for use on school and/or institutional grounds. Toddlers (1–3 years old) are the most sensitive group expected to be on treated turf and have habits that would result in greater exposure than older children. The results of this analysis demonstrate that EPA has determined that risks associated with the use of products labeled for school grounds are within the acceptable range for toddlers and are protective of older children. For a brief explanation of the process, see *Appendix 5*. Questions about the analysis should be directed to the BPC toxicologist.

Assessment of compliance with BPC rule Chapter 27: Standards for Pesticide Applications and Public Notification in Schools

The BPC identified four steps that should be undertaken to assess compliance with the existing rule (*see details below*). Since pesticide inspectors regularly visit schools and complete detailed inspection reports, the first step was to summarize the most recent inspection reports. Additionally, inspectors were interviewed for insights that were not captured on the reports. Secondly, a random selection of schools within the state were visited and surveyed about their grounds maintenance practices. Thirdly, selected grounds management professionals, known to contract with schools, were interviewed about their outdoor pest management practices at schools. Finally, all schools known to have synthetic turf fields were contacted to assess current maintenance practices.

1. Analysis of routine school IPM inspections

Since the passage of Chapter 27, BPC inspectors have regularly visited school districts to assess compliance. On average, approximately 100 school districts are visited each year. A

standardized inspection form is completed at each visit. See *Appendix 6* for a summary of data from the 2010 inspection reports. Trends and observations are detailed below.

Observations from the 2010 inspection reports and the compliance staff

- BPC inspectors believe that most IPM coordinators and school administrators now understand the importance of reducing children's exposure to pesticides.
- Inspectors also believe that most IPM coordinators are making a reasonable effort to comply with the rule.
- Data from the inspection reports indicate the following:
 - Nearly all schools have an IPM policy.
 - Compliance for indoor pest management is high.
 - Most schools that are doing a poor job with Chapter 27 (usually private schools) are not aware of the rule; once given the information, compliance improves.
 - Many IPM coordinators are familiar with IPM and school personnel are using non-chemical techniques to manage pests.
 - At many schools indoor pests are being adequately monitored.
- Compliance inspections have tended to focus on indoor applications. This may be a result of:
 - the time of year that inspections are conducted;
 - the fact that IPM coordinators are often more familiar with indoor pest management;
 - records are poor for outdoor applications and therefore verification by inspectors is difficult;
 - the inspection form and process being used did not differentiate between indoor and outdoor.
- Inspectors find it challenging to contact the IPM coordinator because:
 - school staff may not know the identity of the coordinator;
 - school fails to assign the responsibility to anyone;
 - staff turnover has resulted in communication issues.
- Due to a high turnover rate, inspectors often spend considerable time educating IPM coordinators.
- The job of the IPM coordinator is sometimes assigned to a position with inadequate authority within the school community to be effective.
- Available records indicate that schools are doing relatively few pesticide applications. However, records are often incomplete, making verification difficult.
- In 2010, 17 of 108 inspections (16%) included reported applications which required a certified applicator and five-day advance notification; 51 of 108 inspections (47%) included reported applications which required a certified applicator but no specific notification.
- Overall, record keeping is poor:
 - 94 of 108 inspections indicated a pesticide application was made in the last two years:
 - 70 reported maintaining application-related records (74%);
 - 63 reported having IPM records (67%);
 - 39 reported having labels on file (41%);

- 41 reported having MSDSs on file (44%);
 - 48 reported having commercial applicator records (51%).
- Most schools contract with one or more pest management professionals (indoor/outdoor), ranging from monthly monitoring to an on-call service. To manage athletic fields, schools mostly rely on pest management professionals for monitoring and treatment.
- In general, structural pest management professionals have voluntarily taken responsibility for ensuring that schools comply with the notice and record requirements. Grounds maintenance professionals have not taken on this responsibility.

2. *On-site surveys of randomly selected schools*

Twenty school districts or private schools that have at least one high school and one middle school were randomly selected from each of the four interscholastic division classes. MDOA staff collaborated with the Maine Department of Education (MDOE) to send out a letter to all superintendents in the state to enlist their support. Of these, eight public school districts and one private school serving grades pre-K–12 were visited. These nine school systems, located in eight counties, ranged in size from three to 13 schools and have at least one high school placed in interscholastic divisions ranging in size from Class A to Class C. None of the Class D schools contacted agreed to participate.

A MDOA staff member, with familiarity and knowledge about school IPM, visited the selected districts to meet with school representatives. Participating school personnel usually included the IPM coordinator and/or other school staff responsible for making decisions about care of sports fields, playgrounds and lawns. At two visits, the superintendent, or headmaster, was also present. For all nine visits, MDOA staff attempted to obtain or view a copy of the IPM policy, IPM notices and records, and pesticide application notices and records. During the site visits, both indoor and outdoor IPM practices were reviewed. Special attention was given to lawns, athletic fields and playgrounds, because that was the focus of the resolve. Practices in school gardens, greenhouses, and nature trails were also reviewed, where they existed. See *Appendix 7* for a summary report of findings.

Observations from the on-site interviews and surveys

- IPM coordinators who have received IPM training are doing a much better job of implementing the requirements.
- In general, when schools are familiar with the rule and the IPM coordinator has received training, school personnel do not feel the rule is onerous.
- Most school districts rely heavily on management recommendations from contracted grounds management professionals.
- Cost is one of the primary considerations behind grounds management decisions.
- Aesthetics and playability of varsity sports fields is another major consideration in grounds management decisions.
 - Varsity athletics attract parents, fans and revenue;
 - The frequency of use and type of play is hard on the turf, and requires more maintenance than other turf areas.

- Schools were not found to be routinely applying pesticides to lawns, practice fields or other school grounds areas. The exception has been some herbicide treatments for control of weeds along fence lines, or applications to the lower portion of the building perimeter and adjacent ground for ant management, both of which may receive annual or biennial treatments (more research was done to determine the extent of pesticide usage on school grounds—*see below*).
- Schools generally have no records for outdoor pesticide applications and rely on grounds management professionals to keep those records for them.
- Records and interviews indicate that schools almost always schedule pesticide applications during vacations, when fewer students are present and five-day advance notice is not required. This is done both to avoid the notice requirement and to reduce exposure.
- Confusion remains regarding notification exemptions. Some schools erroneously believe it permissible to do applications over a weekend without doing the five-day notice. Others schedule applications during summer vacations when five-day advance notice is not required, but fail to post the area two days before and after the application as required.
- Most schools are using good sanitation, maintenance and land-care practices, consistent with IPM, although they are not always recognizing these practices as components of IPM, nor are they keeping records of them.
- Maintaining an accurate, up-to-date list of IPM coordinators to serve as information contact points is difficult, because schools are not required to provide this information, and there is a high turnover rate for this position.
- Few records exist regarding disinfectants on artificial turf, and there may be some confusion about whether these applications are considered pesticide treatments.

3. Interviews with grounds maintenance professionals

Companies providing pest management services to school grounds were identified by reviewing inspection reports and survey results. Five companies that specialize in turf maintenance and three companies that contract for tick and/or mosquito control were interviewed about pest management practices, with a focus on pesticide use.

Observations from the grounds maintenance professional interviews

- Nearly all of the outdoor pesticide applications are done during school vacations.
 - Written notice to staff and parents is not required during vacations.
 - There are fewer people using the treated areas during those periods.
 - One company makes perimeter mosquito treatments (along the edge of wooded areas) at one school during both vacation and non-vacation periods.
- Nearly all of the turf pesticide applications are made on high school and, less often, on middle school athletic fields.
 - The intense usage and wear on the athletic fields are destructive to the turf, creating bare areas that allow weeds to become established.
 - All of the turf management companies periodically apply broadleaf herbicides to athletic fields.

- The average frequency ranged from once every three years to once a year.
 - White grubs are the other principle pest problem for which grounds maintenance professionals apply pesticides on athletic fields.
 - Not all fields have grub problems, so not all fields are treated.
 - Some grounds maintenance professionals routinely apply herbicides to the baseball and softball base paths and softball infields.
- School lawn areas and playgrounds are rarely treated with pesticides.
- The vast majority of schools do not treat for ticks or mosquitoes.
- Grounds maintenance professionals occasionally treat fence lines with herbicides.
- Grounds maintenance professionals also report evidence of other fence line treatments that they did not perform.

4. *Research on use of disinfectants on artificial turf*

BPC staff contacted the six Maine school systems known to have artificial turf fields and asked about their current cleaning and disinfection practices on those fields. One company that treats artificial turf fields with disinfectants was also contacted. Most of the schools apply disinfectants to artificial turf or contract with an outside company to do periodic applications. In the case of one school, rather than treating the entire field, disinfectants are used only when there is a body fluid spill.

The BPC staff did a literature search on this subject and found most researchers agree that routine use of disinfectants is not warranted. This recommendation is supported by the fact that the National Football League has discontinued this practice on their game day fields. The staff also asked State Epidemiologist Dr. Stephen Sears at the Maine Center for Disease Control and Prevention to review the literature and provide an opinion. Dr. Sears concluded that he did not think disinfection is warranted, given the data. Instead, he thought careful examination of athletic injuries and appropriate care and monitoring of the athlete after injury is the best prevention strategy.

The BPC staff added BMPs for artificial athletic fields to the level-specific BMP document which do not recommend routine use of disinfectants, but instead recommend reserving their use for emergency body fluid spills (*see Appendix 4*).

Changes implemented to improve effectiveness of Chapter 27

Several additional steps—beyond those required by the resolve—have been taken by MDOA and BPC staff in response to observations made while following the mandates in Resolve 2011, Chapter 59.

First, MDOA staff engaged with the MDOE, Educational Plant Maintenance Association (EPMA), and Maine School Management Association (MSMA) to communicate with superintendents, facilities directors and IPM coordinators to highlight existing school IPM requirements, solicit cooperation with the compliance assessment visits and invite comments on the draft versions of the BMPs.

- Two announcements were posted (August and December 2011) on MDOE’s “Commissioner’s Update” webpage and superintendent’s listserv.
- An announcement was sent to school IPM coordinators directly and through the EPMA’s communication networks.
- MSMA agreed to share the announcement with its membership.
- These communication methods, in cooperation with MDOE, MSMA and EPMA, were again used in December 2011, to widely share a second announcement soliciting input on the proposed BMPs.

Second, the BPC’s compliance staff initiated a comprehensive reassessment of how inspections are conducted at schools, based on feedback from the inspection staff, and findings from the assessment required under the resolve. Verifying compliance with the school IPM requirements is a complex undertaking which requires acquisition and verification of information from a variety of sources. Experience has shown that the IPM coordinators are often knowledgeable about some pest management activities going on at the school, but rarely do they have all the information. Accordingly, in order to gain a comprehensive compliance assessment, the staff must interview school decision makers involved in both indoor and outdoor pesticide applications, in addition to any licensed applicators providing service to the school. Review of records from all parties may also be necessary.

Consequently, the compliance staff has initiated a process to update both the inspection forms and the inspection approach in an effort to obtain a more complete and accurate appraisal of each school’s compliance with the requirements.

Finally, MDOA staff initiated discussions with MDOE to establish a protocol whereby MDOE will collect the name and contact information of the IPM coordinator for every school system on an annual basis. MDOE has agreed to do this and to share it with MDOA annually, starting in 2012. This will greatly enhance the ability of MDOA and BPC to communicate and promote compliance with pesticide regulations applicable to schools.

SECTION IV: CONCLUSIONS/RECOMMENDATIONS

Maine’s school IPM rule has been in effect for nine years. In conducting the review and analysis required by Resolve 2011, Chapter 59, MDOA staff noted several aspects of the rule that have been beneficial. At the same time, other parts of the rule have been less effective. MDOA staff observations are detailed below.

Positive outcomes resulting from Chapter 27

- Due in large part to the notification provisions required for higher risk pesticide applications, very few of those applications are made during the school year.
 - Almost all indoor pesticide applications are lower-risk applications in which the potential for human exposure is minimized.
 - Examples of lower-risk applications are baits, gels and crack-and-crevice treatments placed in inaccessible areas in a manner which minimizes any airborne component of the pesticide.

- Almost all outdoor pesticide applications are made during school vacations.
- School officials are far more aware of the importance of avoiding human exposure to pesticides.
- School officials are more aware of the requirement to have licensed applicators making pesticide applications.
- School personnel are more aware of many low-cost, non-pesticide pest management strategies, such as sanitation and exclusion.

Less successful aspects of Chapter 27

- Overall, schools have struggled with the record-keeping requirements.
- In general, the IPM coordinator position has not functioned as originally envisioned under the rule.
 - Instead of coordinating pest management activities, in many schools, the coordinator has simply become the person in charge of maintaining the records.
- Communication within a school system about outdoor pesticide applications is often poor. Coordinators generally have records and insight about indoor pesticide use, but not outdoor use.
 - School officials making decisions about outdoor applications are sometimes different than those making the indoor decisions.

Possible recommendations for minimizing the use of pesticides in schools and on school grounds

- Strengthen the role of the IPM coordinator.
 - Require training for IPM coordinators. On-line training and seminars should both be offered.
 - Require the IPM coordinator to authorize the pest management service contracts and each higher-risk pesticide application, which includes most outdoor applications. As part of this process, the licensed applicator could indicate what will be necessary for notification for each proposed application, and the IPM coordinator could assume responsibility for notification.
- Reduce and consolidate the school record-keeping requirements. The BPC proposes that all current record-keeping requirements be replaced with a single “Pest Management Activity Log” that would contain concise notations about pesticide applications, pest monitoring, pest sightings and non-chemical-control measures, such as exclusion. The log would be used by both school staff and pest management professionals.
- Eliminate the beginning-of-school-year notification requirement.
- Work with stakeholders to identify practical solutions to current weaknesses in the rule to improve:
 - Communication between IPM coordinators and pest management professionals;
 - Record keeping of pesticide applications;
 - Notification and signage for pesticide applications.
- Require school districts to notify the BPC with the name and contact information of IPM coordinator(s) at the beginning of each year, and whenever there is a change, so there is a point of contact for disseminating educational information.

SECTION V: APPENDICES

- 1. CHAPTER 27: STANDARDS FOR PESTICIDE APPLICATIONS AND PUBLIC NOTIFICATION IN SCHOOLS**
- 2. RESOLVE 2011, CHAPTER 59**
- 3. AD HOC COMMITTEE TO DEVELOP BEST MANAGEMENT PRACTICES FOR ATHLETIC FIELDS AND SCHOOL GROUNDS**
- 4. BEST MANAGEMENT PRACTICES FOR SCHOOL LAWNS, PLAYGROUNDS AND ATHLETIC FIELDS**
- 5. BPC BRIEF REVIEW OF EPA RISK ASSESSMENTS FOR PESTICIDES LABELED FOR USE ON SCHOOL TURF AREAS**
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01 DEPARTMENT OF AGRICULTURE, FOOD & RURAL RESOURCES

026 BOARD OF PESTICIDES CONTROL

Chapter 27: STANDARDS FOR PESTICIDE APPLICATIONS AND PUBLIC NOTIFICATION IN SCHOOLS

SUMMARY: These regulations establish procedures and standards for applying pesticides in school buildings and on school grounds. This chapter also sets forth the requirements for notifying school staff, students, visitors, parents and guardians about pending pesticide applications.

Section 1. Definitions

- A. **Integrated Pest Management.** For the purposes of this regulation, Integrated Pest Management (IPM) means the selection, integration and implementation of pest damage prevention and control based on predicted socioeconomic and ecological consequences, including:
- (1) understanding the system in which the pest exists,
 - (2) establishing dynamic economic or aesthetic injury thresholds and determining whether the organism or organism complex warrants control,
 - (3) monitoring pests and natural enemies,
 - (4) when needed, selecting the appropriate system of cultural, mechanical, genetic, including resistant cultivars, biological or chemical prevention techniques or controls for desired suppression, and
 - (5) systematically evaluating the pest management approaches utilized.
- B. **School.** For the purposes of this regulation, School means any public, private or tribally funded:
- (1) elementary school,

- (2) secondary school,
 - (3) kindergarten or
 - (4) nursery school that is part of an elementary or secondary school.
- C. **School Building.** For the purposes of this regulation, School Building means any structure used or occupied by students or staff of any school.
- D. **School Grounds.** For the purposes of this regulation, School Grounds means:
- (1) land associated with a school building including playgrounds, athletic fields and agricultural fields used by students or staff of a school, and
 - (2) any other outdoor area used by students or staff including property owned by a municipality or a private entity that is regularly utilized for school activities.
- E. **Integrated Pest Management Coordinator.** An employee of the school system or school who is knowledgeable about integrated pest management and is designated by each school to implement the school pest management policy.

Section 2. Requirements for All Schools

- A. All public and private schools in the State of Maine shall adopt and implement a written policy for the application of Integrated Pest Management techniques in school buildings and on school grounds.
- B. Each school shall appoint an IPM Coordinator who shall act as the lead person in implementing the school's Integrated Pest Management policy. The IPM Coordinator shall be responsible for coordinating pest monitoring and pesticide applications, and making sure all notice requirements as set forth in this chapter are met. In addition, the IPM Coordinator shall maintain and make available to parents, guardians and staff upon request:
- (1) the school's IPM Policy,
 - (2) a copy of this rule (CMR 01-026 Chapter 27),
 - (3) records of all pesticide applications as required under CMR 01-026 Chapter 50 – Record Keeping and Reporting Requirements,
 - (4) copies of labels and material data safety sheets for all products applied, and
 - (5) when pesticides not exempt under Section 3 are applied, records of the IPM steps taken as described in Section 5.B. of this chapter.

- C. Each school shall provide an annual notice to parents or guardians and school employees. This notice must be provided within two weeks of the start of the school year regardless of whether there are plans to have pesticides applied in the coming year.

Section 3. Exemptions

- A. The following pesticide uses are exempt from the requirements of Section 4 and 5 of this Chapter:
 - (1) application of ready-to-use general use pesticides by hand or with non-powered equipment to control or repel stinging or biting insects when there is an urgent need to mitigate or eliminate a pest that threatens the health or safety of a student, staff member or visitor,
 - (2) application of general use antimicrobial products by hand or with non-powered equipment to interior or exterior surfaces and furnishings during the course of routine cleaning procedures, and
 - (3) application of paints, stains or wood preservatives that are classified as general use pesticides.
- B. The following pesticide uses are exempt from the requirements of Section 4 of this Chapter:
 - (1) pesticides injected into cracks, crevices or wall voids,
 - (2) bait blocks, gels, pastes, granular and pelletized materials placed in areas inaccessible to students,
 - (3) indoor application of a pesticide with no re-entry or restricted entry interval specified on its label but entry to the treated area is restricted for at least 24 hours.
- C. When the Maine Center for Disease Control has identified arbovirus positive animals (including mosquitoes and ticks (in the area, powered applications for mosquito control are exempt from Section 4 and 5(B)). Applicators should post the treated area as soon as practical, in a manner consistent with Section 4 C(3)(a).

Section 4. Notification

- A. Within two weeks of the start of every school year, notice shall be given by all schools to all school staff and parents or guardians of students advising them that a school integrated pest management policy exists and where it may be reviewed, that pesticides may periodically be applied in school buildings and on school grounds and that applications will be noticed in accordance with Sections 4(B-D) hereof. This notice shall also state that records of prior pesticide applications and labels and material safety data sheets for

the pesticides used and a copy of the Standards for Pesticide Applications and Public Notification in Schools regulation (CMR 01-026 Chapter 27) are available for review.

- B. Notices given as required by Section 4C shall state, as a minimum: (a) the trade name and EPA Registration number of the pesticide to be applied; (b) the approximate date and time of the application; (c) the location of the application; (d) the reasons for the application; and (e) the name and phone number of the person to whom further inquiry regarding the application may be made. These notices must be sent to school staff and parents or guardians of students at least five days prior to the planned application.
- C. During the school year when classes are regularly scheduled, schools shall provide notice of pesticide applications in accordance with either Section 4C(1) or 4C(2) and with Section 4C(3). When classes are not regularly scheduled, notice shall be accomplished by posting of signs as described in Section 4C(3) of this rule.
 - (1) Notice may be given to school staff and parents or guardians of students using a school whenever pesticide applications not exempted by Section 3 are performed inside a school building or on the school grounds, or
 - (2) The school may establish a notification registry whereby persons wishing notification of each application performed inside a school building or on school grounds may make a written request to be put on the registry list to receive notice whenever pesticide applications not exempted by Section 3 are performed.
 - (3) In addition to the notice provisions above, whenever pesticide applications not exempted by Section 3 are performed in a school building or on school grounds, a sign shall be posted at each point of access to the treated area and in a common area of the school at least two working days prior to the application and for at least forty-eight hours following the application. Posting of the notification signs as required by this Chapter satisfies the posting requirements of Chapter 28 of the Board's regulations.
 - a. The signs shall be:
 - i. at least 8.5 inches wide by 11 inches tall for indoor applications,
 - ii. at least 5 inches wide by 4 inches tall for outdoor applications,
 - iii. made of rigid, weather resistant material that will last at least ninety-six (96) hours when placed outdoors, and
 - iv. light colored (white, beige, yellow or pink) with dark, bold letters (black, blue, red or green).
 - b. The signs for indoor applications must bear:
 - i. the word CAUTION in 72 point type,
 - ii. the words PESTICIDE APPLICATION NOTICE in 30 point type or larger,

- iii. any reentry precautions from the pesticide labeling in at least 12 point type,
 - iv. the trade name and EPA Registration number(s) of the pesticide(s) to be applied in at least 12 point type,
 - v. the approximate date and time of the application in at least 12 point type,
 - vi. the location of the application in at least 12 point type,
 - vii. the reason(s) for the application in at least 12 point type, and
 - viii. the name and phone number in at least 12 point type of the person to whom further inquiry may be made regarding the application.
- c. The signs for outdoor applications must bear:
- i. the word CAUTION in 72 point type,
 - ii. the words PESTICIDE APPLICATION in 30 point type or larger,
 - iii. the Board designated symbol (see appendix A),
 - iv. any reentry precautions from the pesticide labeling in at least 12 point type,
 - v. the trade name and EPA Registration number(s) of the pesticide(s) to be applied in at least 12 point type,
 - vi. the approximate date and time of the application in at least 12 point type,
 - vii. the location of the application in at least 12 point type,
 - viii. the reason(s) for the application in at least 12 point type, and
 - ix. the name and phone number of the person to whom further inquiry regarding the application may be made in at least 12 point type.

Section 5. Integrated Pest Management Techniques

- A. All pest management activities should be conducted using appropriate elements of integrated pest management as described in the latest Cooperative Extension or

Department of Agriculture training manuals for pest management in and/or on school property. In all cases, the application should be conducted in a manner to minimize human risk to the maximum extent practicable using currently available technology.

- B. Prior to any pesticide application the following steps must be taken and recorded:
1. monitor for pest presence or conditions conducive to a pest outbreak,
 2. identify the pest specifically,
 3. determine that the pest population exceeds acceptable safety, economic or aesthetic threshold levels, and
 4. utilize non-pesticide control measures that have been demonstrated to be practicable, effective and affordable.
- C. When a pesticide application is deemed necessary, the applicator must comply with all the requirements of Chapter 31 – Certification and Licensing Provisions/Commercial Applicator. The applicator must also take into account the toxicity of recommended products and choose lowest risk products based on efficacy, the potential for exposure, the signal word on the pesticide label, the material safety data sheet, other toxicology data and any other label language indicating special problems such as toxicity to wildlife or likelihood of contaminating surface or ground water.
- D. Indoor pesticide use must be limited to placement of baits and wall void or crack and crevice and pool and spa disinfectant treatments unless the pest threatens the health and safety of persons in the buildings as determined by the school's integrated pest management coordinator.
- E. Pesticide applications must not be conducted when people are in the same room to be treated except that applicators may set out bait blocks, pastes or gels when only informed staff members are present. When space, spot, surface or fumigation applications are conducted the ventilation and air conditioning systems in the area must be shut off or the entire building must be evacuated. Applications should be planned to occur on weekends or vacations to allow maximum time for sprays to dry and vapors to dissipate.
- F. Outdoor applications should be scheduled so as to allow the maximum time for sprays to dry and vapors to dissipate and shall not occur when unprotected persons are in the target area or in such proximity as to likely result in unconsenting exposure to pesticides. Applications must also be conducted in accordance with all other applicable Board regulations designed for minimizing pesticide drift and posting of treated sites. Spot treatments should be considered in lieu of broadcast applications.
- G. The Integrated Pest Management Coordinator must maintain records of pest monitoring as well as the same pesticide application information required in Section 1.A. of Chapter 50– Record Keeping & Reporting Requirements for a period of two years following all pesticide applications performed along with the labels and material safety data sheets for all products used in or on school property.
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STATUTORY AUTHORITY: 7 M.R.S.A. §§ 601-625 and 22 M.R.S.A. §§ 1471-A-X.

EFFECTIVE DATE:

August 30, 2003, filing 2002-408 accepted October 24, 2002.

AMENDED:

July 5, 2005 – filing 2005-266

March 4, 2007 – Section 3(C), filing 2007-67

Appendix A

Board Designated Symbol for Posting Outdoor Pesticide Applications to School Grounds



PLEASE NOTE: Legislative Information **cannot** perform research, provide legal advice, or interpret Maine law. For legal assistance, please contact a qualified attorney.

Resolve, To Enhance the Use of Integrated Pest Management on School Grounds

Sec. 1 Board of Pesticides Control to develop best management practices for the establishment and maintenance of school lawns, playgrounds and playing fields.

Resolved: That the Department of Agriculture, Food and Rural Resources, Board of Pesticides Control, referred to in this resolve as "the board," shall develop best management practices for the establishment and maintenance of school lawns, playgrounds and playing fields. The best management practices must, at a minimum, address soil and site conditions, and establish treatment thresholds and guidelines based on practical considerations and current science.

The board shall provide every school administrative unit in the State with a copy of the best management practices developed under this section. The board's staff shall work with school integrated pest management coordinators appointed under board rule Chapter 27: Standards for Pesticide Applications and Public Notification in Schools to ensure that the best management practices and the connection between implementing those practices and an effective integrated pest management program are understood by the coordinators; and be it further

Sec. 2 Assessment of compliance with rule for use of pesticides in schools and on school grounds. Resolved: That the board shall assess compliance with board rule Chapter 27: Standards for Pesticide Applications and Public Notification in Schools. In conducting the assessment, the board shall focus particular attention on the processes used to determine the need for pest control and the selection of appropriate products under an integrated pest management system; and be it further

Sec. 3 Reports to the Joint Standing Committee on Agriculture, Conservation and Forestry. Resolved: That, no later than February 1, 2012, the board shall report to the Joint Standing Committee on Agriculture, Conservation and Forestry on actions taken under this resolve. The report must include a copy of the best management practices developed for the establishment and maintenance of school lawns, playgrounds and athletic fields, findings from the assessment of school compliance under section 2 and any recommendations, including amendments to board rules if appropriate, for minimizing the use of pesticides in schools and on school grounds.

No later than February 1, 2014, the board shall report to the joint standing committee of the Legislature having jurisdiction over pesticides regulation matters on continuing efforts to educate and work with schools to minimize the use of pesticides.

Appendix 3

AD HOC COMMITTEE TO DEVELOP BEST MANAGEMENT PRACTICES FOR ATHLETIC FIELDS AND SCHOOL GROUNDS

- Peter Baecher, Parks and Recreation Facilities Manager, Town of Brunswick
- Lauren Ball, DO, MPH, Deputy State Epidemiologist, Maine Center for Disease Control and Prevention
- James Dill, Pest Management Specialist, University of Maine Cooperative Extension, Representative District 14
- Robert Maurias, Co-Owner, Mainely Ticks
- Kathy Murray, Coordinator, Maine School Integrated Pest Management Program, Maine Department of Agriculture, Food and Rural Resources
- Charles Ravis, Board member, Assistant Professor of Sports Management, Thomas College and Turf Management Consultant and Certified Golf Course Superintendent
- Stephen D. Sears, State Epidemiologist, Maine Center for Disease Control and Prevention
- Heather Spaulding, Associate Director, Maine Organic Farmers and Gardeners Association
- Christopher Turmelle, Turf Division Manager, Atlantic Pest Solutions
- Gary Fish, Staff Liaison

ADDITIONAL SIGNIFICANT CONTRIBUTORS TO THE BMPS

- Mary Owen, U-Mass Turf IPM Specialist
- Andrew McNitt, Director of the Center for Sports Surface Research, Penn State University
- Ethan Owens, City of Portland Athletic Facilities Manager
- Brian Eshenaur, Ornamentals IPM Educator, Cornell Cooperative Extension
- Curtis Bohlen, Board Member and Executive Director of Casco Bay Estuary Partnership
- Lynn Braband, NYS Community IPM Program of Cornell University
- Jesse O'Brien, Instructor of Turf Management, University of Maine and Down East Turf Farm

Best Management Practices for Athletic Fields & School Grounds

#1 Goal—Reduce human pesticide exposure!

- ◆ Minimize pesticide use
- ◆ Maintain healthy plants
- ◆ Choose pest resistant plant varieties
- ◆ Apply spot treatments whenever possible
- ◆ Choose products proven to be effective at low application rates
- ◆ Choose products that leave little or no residue
- ◆ Apply when school is not in session or over extended vacations
- ◆ Keep people off treated areas for as long as possible
- ◆ Check product label for minimum reentry time

Other Key Points for Maintaining Quality Grounds and Reducing Risks

- ◆ Maintain good communication between staff and contractors involved in grounds maintenance and the IPM coordinator
- ◆ Emphasize practices that improve turf density and help minimize need for pesticides
- ◆ Identify pests specifically and confirm a pest exceeds threshold levels before authorizing any treatments
- ◆ Make sure all pest control products (weed, insect, rodent or plant disease controls) are labeled for use on school grounds and applied by licensed commercial pesticide applicators
- ◆ Confirm that all contracts for grounds maintenance services follow these BMPs and the guidelines shown on the opposite side of this bulletin
- ◆ Develop a maintenance schedule for the more intensively managed areas so that key steps aren't missed
- ◆ Keep detailed records of soil tests, aeration, seeding, top dressing, nutrients and pesticides applied for at least two years

Introduction

In 2011, The Maine Legislature directed the Board of Pesticides Control to evaluate the use of pesticides on school grounds and to develop Best Management Practices (BMPs) for pesticide use with a goal of minimizing human exposure to pesticides. This brochure explains how schools should implement these BMPs. Applying these recommendations should also help schools keep maintenance costs down while improving the safety and appearance of school grounds.

Getting Started

Schools should identify the employees who are involved in school grounds maintenance decisions, including the IPM coordinator, the facilities manager, the athletic director and varsity coaches. The IPM coordinator must be included so that management decisions involving pesticides will be consistent with state law and all notification requirements will be followed.

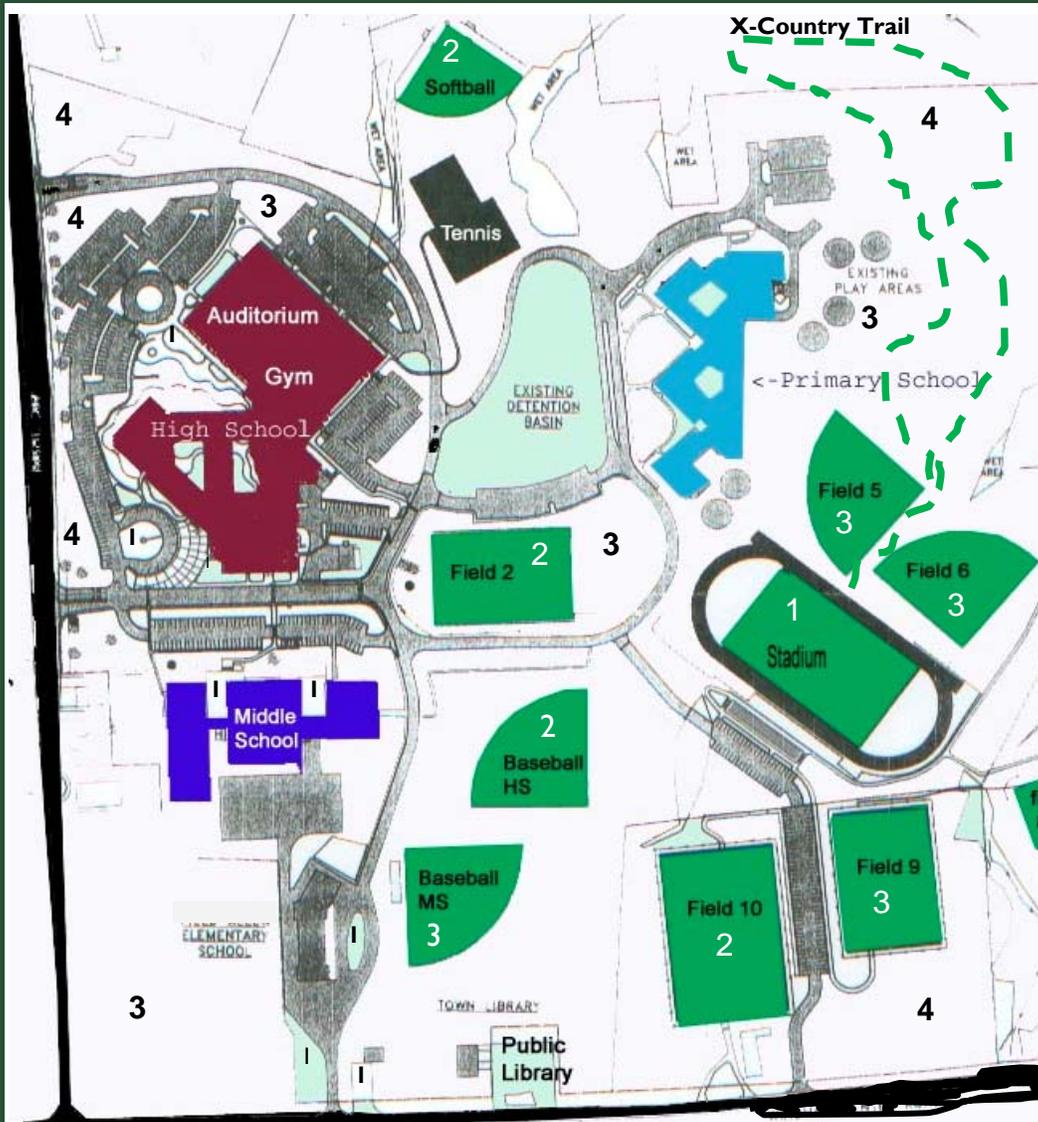
These grounds maintenance decision makers should assign a Grounds Maintenance Priority Level to all school grounds.* How fields are classified will vary by school and by district, based on use, priorities and available funds.

Assigning Grounds Maintenance Priority Levels

The grounds care BMPs are separated into four levels that roughly correspond to the intensity of use and aesthetic importance of each area. High impact varsity athletic fields may be Level 1 or Level 2. Due to the intensity of use, practice fields that need a high level of maintenance are usually designated Level 2 or 3. Lawn areas and playgrounds generally won't warrant a high level of maintenance and will be assigned to Level 3 or 4. Making a simple map of the maintenance levels for future reference will be helpful to both maintenance personnel and the decision makers (*see map example on opposite side and attached Level-Specific BMPs*).

**School grounds means: land associated with a school building including playgrounds, athletic fields and agricultural fields used by students or staff of a school and any other outdoor area used by students or staff including property owned by a municipality or a private entity that is regularly utilized for school activities.*

Grounds Maintenance Priority Levels



Numbers indicate the grounds maintenance priority level

Grounds Maintenance Priority Levels

Level 1—Highest care areas, e.g., some varsity playing fields

Level 2—High care areas, e.g., practice fields or multipurpose fields. May include varsity fields or high visibility lawn areas depending on the school

Level 3—Moderate care areas, e.g., playgrounds, low-use areas, common areas. May include practice fields and some lawn areas depending on the school

Level 4—Lowest care areas, e.g., most lawn areas, natural areas, fence lines, property edges, slopes, utility areas, ditches or trails

Other Important Guidelines

Informed Product Choice

- ◆ Read labels and MSDS thoroughly prior to making a choice
- ◆ Choose products with proven efficacy at low use rates
- ◆ Choose products that pose the lowest exposure potential (watered into the soil, little to no surface residues, low volatility & low drift potential)
- ◆ Choose selective products that affect a narrow range of organisms
- ◆ Avoid products like weed and feed that require broadcast application

Grounds maintenance contracts should clearly establish:

- ◆ The goals of the IPM program
- ◆ What services are provided and how they are implemented
- ◆ Posting and notification responsibilities
- ◆ Consultation with the IPM coordinator
- ◆ The population levels of specific pests that can be tolerated without treatment
- ◆ Appropriate least-risk procedures to correct pest problems
- ◆ The restrictions on pesticide use: types of applications, timing of applications, restricted locations, materials that can be used
- ◆ The pest management actions that are the responsibility of the school district

FOR MORE INFORMATION:

Maine Department of Agriculture, Food and Rural Resources

- ◆ Maine Board of Pesticides Control
thinkfirstspraylast.org
 - ◆ Maine School IPM Program
thinkfirstspraylast.org/schoolipm
- 28 State House Station, Augusta, ME 04333-0028 • 207-287-2731

The University of Maine Cooperative Extension

umaine.edu/ipm/
491 College Ave, Orono, ME 04469-5741 • 207-581-3880



Level Specific BMPs for Athletic Fields and School Grounds

	Level 1 – Highest Care	Level 2 – High Care	Level 3 – Moderate Care	Level 4 – Lowest Care
	High impact athletic game fields, e.g. varsity football, soccer, field hockey fields	<ul style="list-style-type: none"> • Low impact athletic game fields, e.g. baseball, softball • Multipurpose fields • Athletic practice fields 	<ul style="list-style-type: none"> • High visibility lawns • Moderate use areas • Playground fields 	<ul style="list-style-type: none"> • Utility areas, slopes, ditches • Natural areas • Fence lines/property edges • Lawns
Field Use Restrictions	<ul style="list-style-type: none"> • Whenever possible restrict field use when soils are saturated and surface water is present • If field size allows, move goal areas regularly 			
Soil Test	<p>At establishment and before renovation and every 1-3 years when pH needs to be adjusted Every 2 – 5 years otherwise Soil test should determine:</p> <ul style="list-style-type: none"> • Nutrient levels • pH • Level of compaction • Soil texture and structure (Level 1 only) • Percent organic matter • Thatch depth • Rooting depth 		<p>At establishment and before renovation or repair and every 1-3 years when pH needs to be adjusted Every 3 – 5 years other wise</p> <ul style="list-style-type: none"> • test for nutrient levels and pH 	<p>At establishment and before renovation test for nutrient levels and pH</p>
Irrigation for Maintenance of Established Turf	<ul style="list-style-type: none"> • Supplement rainfall when needed to provide a total of 1” of water per week when grass is actively growing (April – November) • Water turf early in the morning 	<ul style="list-style-type: none"> • As needed to promote active turf growth and prevent summer dormancy • Water turf early in the morning 	<p>Only required during renovation or repair, otherwise allow summer dormancy</p>	
Aeration	<ul style="list-style-type: none"> • 2-6 times/year at a depth of 3-12 inches using a combination of hollow core, solid tine, or shatter aeration • At least one of the aerations should be deep tine or shatter to a depth of at least 8 inches • Intense use areas require the most aeration • Avoid spring aeration when seeding of crabgrass or other summer annuals is a threat 	<ul style="list-style-type: none"> • 1-2 times/year as needed • Use a combination of hollow core, solid tine, or shatter aeration at a depth of 3 – 8 inches • Avoid spring aeration when seeding of crabgrass or other summer annuals is a threat 	<ul style="list-style-type: none"> • Once every two years or as needed • Avoid spring aeration when seeding of crabgrass or other summer annuals is a threat 	<p>Never</p>

	Level 1 – Highest Care	Level 2 – High Care	Level 3 – Moderate Care	Level 4 – Lowest Care
Fertilization and Nutrients	<ul style="list-style-type: none"> • Only apply amendments and nutrients as indicated by soil test, including phosphorus and potassium • Follow soil test recommendations when establishing new seed • Apply N at a rate of 2-4 lbs per 1,000 sq.ft per year in several applications rather than all at once • Fertilize frequently (7 to 10 applications) throughout the season • Apply no more than 0.5 pound of soluble nitrogen per 1,000 square feet per application • Slow release nitrogen (N) fertilizers that are 40-60% water insoluble can be applied at higher rates and less often • Fertilizer rate should be reduced or fertilization eliminated during hot and dry periods unless irrigation is available • Sand based fields may require additional fertilizer • Apply calcitic or dolomitic limestone in spring and/or fall to maintain soil pH within the 6.0 – 6.5 range and to meet soil test requirements for calcium or magnesium 	<ul style="list-style-type: none"> • Only apply amendments and nutrients as indicated by soil test, including phosphorus and potassium • Follow soil test recommendations when establishing new seed • Apply N at a rate of 1-3 lbs per 1,000 sq.ft per year with 2/3 in the fall and 1/3 in the spring • Apply in several applications rather than all at once • Apply no more than 0.5 pound of soluble nitrogen per 1,000 square feet per application • Slow release nitrogen (N) fertilizers that are 40-60% water insoluble can be applied at higher rates and less often • Apply calcitic or dolomitic limestone in spring and/or fall to maintain soil pH within the 6.0 – 6.5 range and to meet soil test requirements for calcium or magnesium 	<ul style="list-style-type: none"> • Only apply amendments and nutrients as indicated by soil test, including phosphorus and potassium • Follow soil test recommendations when establishing new seed • If the turf begins quality is not acceptable, apply N at a rate of 1-2 lbs/1,000 sq.ft per year with 2/3 in the fall and 1/3 in the spring • Apply no more than 0.5 pound of soluble nitrogen per 1,000 square feet per application • Slow release nitrogen (N) fertilizers that are 40-60% water insoluble can be applied at higher rates and less often • Apply calcitic or dolomitic limestone in spring and/or fall to maintain soil pH within the 5.5 – 6.5 range and to meet soil test requirements for calcium or magnesium 	<ul style="list-style-type: none"> • Follow soil test recommendations when establishing new seed • Seldom to never after establishment
Mowing	<ul style="list-style-type: none"> • Proper mowing height and frequency prevents weeds • Mow to greatest height tolerable for the sport, e.g. 1 to 3 inches depending on type of sport and required playing schedule • Mow to 3 inches or higher during off-season and gradually lower to desired height for play over several mowings • Do not remove more than 1/3 of plant height at each mowing • Keep mower blades sharp • Unless the turf has an active fungal disease or play will be interrupted, return the grass clippings • Use a mulching mower 		<ul style="list-style-type: none"> • Proper mowing height and frequency prevents weeds • Mow to a height of not less than 3 inches • Do not remove more than 1/3 of plant height at each mowing • Keep mower blades sharp • Whenever possible return the grass clippings • Use a mulching mower 	<ul style="list-style-type: none"> • Mow as needed to maintain function of area • Do not remove more than 1/3 of plant height at each mowing when appropriate for the site, use and grasses present • Keep mower blades sharp • Whenever possible return the grass clippings • Use a mulching mower • Utility and low maintenance turf areas need only be mowed in late fall

	Level 1 – Highest Care	Level 2 – High Care	Level 3 – Moderate Care	Level 4 – Lowest Care
Seeding	<ul style="list-style-type: none"> Depending on level of management available, athletic fields should be either a 100% blend of Kentucky bluegrass cultivars, or a 100% blend of improved turf-type tall fescue cultivars, or a mix of Kentucky bluegrass and perennial ryegrass Maintain vegetative cover by repeated seeding any time soil is exposed. This may be 4-8 times/year Mid-August-early October is ideal timing Mid-April-early June to repair worn areas Select hardy, wear-, pest-, and drought-tolerant grass seed species and cultivars including: tall fescues, perennial ryegrass and Kentucky bluegrass Use a variety of seeding strategies: <ul style="list-style-type: none"> Drill seed in 2 to 4 directions Use pre-germinated seed and sand mix to fill worn areas and divots Broadcast seed before each game to allow players to "cleat-in" the seed Broadcast seed prior to dragging aeration cores 	<ul style="list-style-type: none"> Lawns should be primarily mixtures of fine fescue or tall fescue with limited Kentucky bluegrass or perennial ryegrass Higher traffic areas should be seeded with mixes that contain a low percentage of fine fescues Mid-August through early-October as needed April to repair worn areas or establish new grass areas Drill seed or broadcast seed and drag in combination with aeration Select hardy, wear-, pest-, and draught-tolerant grass seed mixture including tall fescues, perennial ryegrass and Kentucky bluegrass 	<ul style="list-style-type: none"> Lawns should be primarily mixtures of fine fescue or tall fescue with limited Kentucky bluegrass or perennial ryegrass Higher traffic areas should be seeded with mixes that contain a low percentage of fine fescues Repair as needed to maintain turf density and prevent erosion Without irrigation, seed only September to mid-October when adequate moisture is anticipated 	<ul style="list-style-type: none"> Lawns should be primarily mixtures of fine fescue or tall fescue with limited Kentucky bluegrass or perennial ryegrass Higher traffic areas should be seeded with mixes that contain a low percentage of fine fescues Utility areas can be seeded with native conservation grasses, forbs or perennial flowering plants Repair as needed to maintain turf density and prevent erosion In September when adequate moisture is anticipated
Seeding continued		<ul style="list-style-type: none"> Irrigation is essential during germination and establishment of new seed Choose seed mixtures based on soil type and intensity of use Rescue seeding can be done with high quality perennial ryegrass blends For seed selection use the National Turf Evaluation Program spreadsheet** 		
Re-sodding	<ul style="list-style-type: none"> Intense use areas, such as soccer goals and between the hash marks on football fields, every 1 to 3 years as needed Irrigation is essential at installation and during grow-in period 	<ul style="list-style-type: none"> Intense use areas, such as around pitcher's mound or baseball infields Irrigation is essential at installation and during grow-in period 	Never	Never

**<http://apps.hort.iastate.edu/turfgrass/extension/InteractiveNTEPSpreadsheet.xlsm>

	Level 1 – Highest Care	Level 2 – High Care	Level 3 – Moderate Care	Level 4 – Lowest Care
Topdressing	<ul style="list-style-type: none"> • Apply in combination with aeration to prepare seed bed, modify soil and smooth field • Use finished composts with low nitrogen and phosphorus content, or • Use a soil mix that is similar to the existing soil in the root zone • In all cases avoid forming soil layers which may cause shallow rooting depth and interfere with water movement in the soil 		Never	Never
Weeds	<ul style="list-style-type: none"> • Following the previous BMPs will establish a healthy, thick turf which will outcompete broadleaf weeds • Depending on weed species present, accept up to 15 - 20% weeds 	<ul style="list-style-type: none"> • Following the previous BMPs will establish a healthy, thick turf which will outcompete broadleaf weeds • Depending on weed species present, accept up to 20 - 30% weeds 	<ul style="list-style-type: none"> • Hand-pull weeds, use a weed whacker or use heat or steam to kill weeds • Use mulch in flower beds and around landscape plantings to reduce weeds • Use landscape fabric under playground shock absorption materials • Depending on weed species present, 50% weeds or more is acceptable in most lawns • Use broadleaf herbicides only when needed, based on monitoring, to reduce weed populations to acceptable levels • Use targeted spot treatments whenever possible and avoid broadcast applications 	<ul style="list-style-type: none"> • Hand-pull weeds • Use a weed whacker, heat or steam around fences and other structures • Spray fence lines only when necessary and schedule when students will not be in the area for several days • Use herbicides to control invasive and noxious plants when necessary • Use targeted spot treatments whenever possible and avoid broadcast applications
	<ul style="list-style-type: none"> • Use broadleaf herbicides only when needed, based on monitoring, to reduce weed populations to acceptable levels • Use targeted spot treatments whenever possible and avoid broadcast applications • Coordinate any herbicide use with annual over-seeding program so desirable turf seed is not damaged • Apply pre-emergent herbicide in spring primarily for crabgrass if needed, based on weed monitoring during the previous year • Broadleaf weed control every 2-3 years, only as needed • Broadleaf weed control in spring or fall is more effective, but to reduce student exposure applications may be more acceptable during the summer when school is not in session • Summer herbicide applications should only be done when the weeds are actively growing • When weeds are drought stressed, water the area to be treated for a few days prior to herbicide application • Herbicides should not be applied in temperatures above 85° F to avoid turf damage and reduced efficacy • Effective post-emergent crabgrass control is available and may be used as an alternative to routine pre-emergent crabgrass applications when areas of crabgrass are limited 			

	Level 1 – Highest Care	Level 2 – High Care	Level 3 – Moderate Care	Level 4 – Lowest Care
Insect Pests <ul style="list-style-type: none"> • White Grubs are the larvae of Japanese beetles, May/June beetles, European Chafers, Asiatic garden beetles, Oriental beetles and other scarabs. Turf injury occurs from late July through November and from April - June and is often localized. A site-specific strategy should be practiced • Action Thresholds for non-irrigated turf (grubs/sq.ft.) Action thresholds may be increased 30% with irrigation • European chafer: 4 to 6/sq.ft. • Japanese beetle: 6 to 12/sq.ft. • Oriental beetle: 6 to 12/sq.ft. • Asiatic garden beetle: 10 to 20/sq.ft. 	<ul style="list-style-type: none"> • Monitor July-September • Beginning of spring and fall sports seasons coincides with peak turf injury from white grubs • Action threshold levels are species dependent (see cell to left) • Irrigate as needed to promote grass root growth throughout the growing season • Insect parasitic nematodes can be very effective when applied properly^{%%} • Consider preventative grub control applications on fields that are infested more than 2 – 3 years in a row 	<ul style="list-style-type: none"> • Monitor July-September • Action threshold levels are species dependent (see cell to far left) • Irrigate as needed to promote grass root growth throughout the growing season • Action thresholds may be doubled with irrigation • Insect parasitic nematodes can be very effective when applied properly^{%%} 	<ul style="list-style-type: none"> • Monitor July-September • Scarab beetles (adult white grubs) often avoid laying eggs in low maintenance non-irrigated turf • Action threshold levels are species dependent (see cell to far left) • Action thresholds may be doubled with irrigation • Insect parasitic nematodes can be very effective when applied properly^{%%} 	Pesticide treatment never required
Insect Pests <ul style="list-style-type: none"> • Chinch Bugs 	<ul style="list-style-type: none"> • Supplement rainfall when needed to provide a total of 1" of water per week during summer • Avoid over-fertilizing to prevent thatch build-up. Dethatch and/or core aerate if thatch exceeds ¾ inch • Pesticide applications only as needed when damage is evident and more than 5-10 chinch bugs per sample using coffee can-float monitoring method^{&&} • If seeding, select resistant, endophytic varieties of tall fescue, perennial ryegrass or fine fescue suitable for athletic fields 		<ul style="list-style-type: none"> • If seeding, select resistant, endophytic varieties of tall fescue, perennial ryegrass or fine fescue suitable for athletic fields 	<ul style="list-style-type: none"> • If seeding, select resistant, endophytic varieties of tall fescue, perennial ryegrass or fine fescue suitable for athletic fields
Turf Diseases^{@@} <ul style="list-style-type: none"> • Brown Patch • Dollar Spot • Leaf Spot 	<ul style="list-style-type: none"> • Apply no more than 0.5 pound of quick release nitrogen per 1,000 square feet per application • Time fertilization and liming to avoid disease critical periods (e.g. avoid fertilization in early spring and just before hot, humid weather) • Remove dew from fields early in the morning, by dragging with a bar • Improve air circulation over turf areas • Irrigate early in the morning only 			
Turf Diseases^{@@} <ul style="list-style-type: none"> • Snow Mold 	<ul style="list-style-type: none"> • Avoid fertilizing turf after mid-October • Continue mowing until growth ceases and gradually increase or reduce mowing height to achieve 2 inches at last mowing • Overseed with tolerant grasses and resistant cultivars, especially if damage has been severe 			

^{%%}http://www.yardscaping.org/lawn/documents/Beneficial_Nematodes.pdf

^{&&}<http://www.gardening.cornell.edu/lawn/lawncare/pestpro.html>

^{@@}<http://extension.umass.edu/turf/publications-resources/best-management-practices>

	Level 1 – Highest Care	Level 2 – High Care	Level 3 – Moderate Care	Level 4 – Lowest Care
Other Pests • Mice, Rats or Other Rodents	<ul style="list-style-type: none"> • Seal or fill in all potential nesting sites • Reduce potential food sources by maintaining covered and sealed dumpsters and trash cans • Clean up all food scraps and waste left out by students, staff or visitors • Avoid installation of bird feeders • Compost piles or bins should be inaccessible to rodents 			
• Stinging Insects <ul style="list-style-type: none"> • Yellowjackets • Wasps • Hornets • Bees 	<ul style="list-style-type: none"> • Beginning in early spring, monitor for stinging insect hives or nests and remove before they become established • Fill in abandoned animal dens (including rodent burrows) in areas students use • Seal cracks and crevices within walls of buildings and on play structures • Restrict outdoor eating and drinking in the late summer/fall when yellowjackets are foraging • Keep garbage cans covered • Install stinging insect traps outside of areas that people frequent • Use RTU aerosol sprays in emergency situations 			
• European Red Ants are stinging insects found primarily along the coast. Nests in a variety of habitats including bark mulch, lawns, forested areas, leaf litter, and under rocks and human debris	<p>Contact the University of Maine Cooperative Extension (1-800-287-0279) to confirm suspected infestations and obtain current management recommendations</p>			
• Mosquitoes	<ul style="list-style-type: none"> • Eliminate sources of standing water and keep all roof gutters free flowing • When monitoring indicates the potential for mosquito vectored disease, restrict outdoor activities to mid-day • Encourage students, staff and visitors to use insect repellents during activities that expose them to biting mosquitoes • When the Maine CDC determines there is a credible threat for mosquito-borne disease near a school, consider hiring a licensed commercial pest management company to apply mosquito controls 			
• Ticks	<ul style="list-style-type: none"> • Move all play structures or class areas at least 3 yards away from forest or brushy edges of school yards • Install a 3 foot wide strip of mulch or crushed rock next to any forest or brushy edges of school yards • Do not allow students to walk into forest or brushy areas next to schools • Keep trails cleared to at least a 6 – 8 foot width to prevent students from brushing up against brushy areas • Remove stone walls or other structures that provide harborage for squirrels, mice and other small mammals • Do not feed birds or other animals on school grounds • Encourage students, staff and visitors to use insect repellents during activities that might expose them to tick habitats • Encourage proper attire to prevent ticks from accessing skin areas • Encourage tick checks each time students and staff enter tick habitats • Keep play areas mowed • Avoid any pesticide application to control ticks unless students or staff must frequently use forest or brushy areas that provide suitable deer tick habitat and deer tick numbers are high 			

	Level 1 – Highest Care	Level 2 – High Care	Level 3 – Moderate Care	Level 4 – Lowest Care
Artificial/Synthetic Turf	<ul style="list-style-type: none"> • Do not apply disinfectants or sanitizers to the field on a routine basis • Use disinfectants only when necessary to clean up blood/body fluids; follow specific label directions to clean and decontaminate against HIV on surfaces soiled with blood/body fluids • To remove mold, dirt or dust, clean field with detergent and surfactant • To remove small leaves, seeds or other small debris, use leaf blowers, rakes or sweepers, being careful not to displace large amounts of infill material • To remove gum, freeze it with ice cubes or aerosol freezing agents • Inspect all equipment for leaks before operating on the field • Monitor and maintain proper infill depth by topdressing just prior to sweeping and grooming • Follow manufacturer guidelines for sweeping and grooming • Go over the field with a magnet periodically to pick up stray metals • For static, apply wetting agents to the infill • Use extreme care when removing snow or ice from the field so not to move the infill or tear seams • Keep all sources of fire or ignition away from the field surface • Never fill gasoline tanks on the field • Aerate infill materials to maintain G-Max value for every test point at less than 200g's (as measured in accordance with ASTM Standard F355-A and ASTM Specification F1936 			

Appendix 5

BPC REVIEW OF EPA RISK ASSESSMENTS FOR PESTICIDES LABELED FOR USE ON SCHOOL TURF AREAS

The purpose of this review was to identify and summarize the current state of the science for determining residential post-application risk assessment for children exposed to pesticides which could be used to treat insects, weeds or plant diseases on school property, including fields used by as playgrounds or athletic venues.

Risk of a toxicological insult is determined through a mathematical relationship between the exposure dose resulting from the pesticide use (in mg/kg of body weight) and the appropriate no-observed-adverse-effect level (NOAEL) from animal studies (toxicity dose, also in mg/kg of body weight). The risk calculated for the exposure is then compared to EPA's chemical-specific acceptable-risk level, referred to as the level of concern (LOC).¹

Because of the low frequency of applications for lawn- and turf-care pesticide products, EPA views exposure to these compounds as acute, short-term or intermediate exposures, rather than chronic. Chronic exposure is considered as daily exposure through diet and/or drinking water, and those analyses are beyond the scope of this review. EPA employs the concept of limit dose in the toxicity studies required to support pesticide registration. If there are no observed adverse effects at this limit dose, it is concluded that there is no hazard to the individual who is exposed through that particular pathway.¹ Also, if the compound is not volatile, EPA waives the requirement for inhalation studies and concludes that there are no inhalation risks.¹ These choices in risk assessment methodology provide an upper limit to exposure and a lower limit in toxicity endpoints. Given that, they provide an adequate margin of safety for pesticides used on lawns.

For EPA's residential post-application risk assessments, toddlers weighing 15 kg (33 lbs) have been identified as the most highly exposed sensitive subpopulation. The routes of exposure considered are dermal, inhalation, oral (hand to mouth, object to mouth, soil ingestions and ingestion of granulars, where appropriate).^{1,2,3} The durations of post-application exposure to toddlers used by EPA for these exposures are defined as acute (1 day), short term (1–30 days) and/or intermediate (1–6 months), depending on the chemical/physical characteristics of the compound.¹ For example, a half-life of 4 days would preclude the need for an acute or intermediate exposure assessment. Toxicity studies with comparable exposure durations are used for the toxicity factor.

¹ Draft Standard Operating Procedure (SOPs) for Residential Exposure Assessments (EPA 2009a)

² Revised Occupational and Residential Exposure Assessment and Recommendations for the Re-registration Eligibility Decision Document for Oxadiazon [PC code 109001 DP Barcodes D276360] (EPA 2001e)

³ Standard Operating Procedure (SOPs) for Residential Exposure Assessments [Contract No. W6-0030, Work Assignment No. 3385.102] (EPA 1997a)

The margin of exposure (MOE) is the ratio of the lowest NOAEL from the appropriate animal studies to the exposure dose. The MOEs that are derived for toddlers are protective for older children with higher body weights and with less of a penchant to put treated objects, soil and granulars into their mouths.

The risk-assessment methodology for exposure durations of acute (single day) to intermediate (1– 6 months) is the MOE approach.⁴ The LOC incorporates the uncertainty factors of 10X for interspecies extrapolation and 10X for intraspecies variability. If there are database uncertainties, another factor of 3X to 10X may be used. If the MOE is greater than the LOC, then the risks are acceptable. If the MOE is lower than the LOC, then mitigation, in the form of label changes or cancellations, may occur.⁵

Summaries of these risks are available by contacting the BPC toxicologist.⁶

⁴ 2-(2, 4-dichlorophenoxy)-R-propionic acid (2, 4-DP-p) its salts and esters Revised HED Preliminary Human Health Risk Assessment [PC Codes: 031402, 031403, 031465 Case # 0294, DP Barcode: D322692] (EPA 2007a)

⁵ 2, 4-D 3rd Revised Occupational and Residential Exposure and Risk Assessment and Response to Public Comments for the Registration Eligibility Decision Document [PC Code 030001, DP Barcode D3165596] (EPA 2005a)

⁶ Lebelle.Hicks@maine.gov or 207-287-7594

School IPM Inspection Summary 2010

01-Feb-12

Number of Inspections	108
Routine Inspections	108
Inspections as a Result of a Complaint	0

	Number answering yes	Percent of all inspections
1. Has an IPM Policy been adopted?	101	94%
2. Is there an IPM Coordinator on staff?	105	97%
3. Was annual notification sent within first two weeks of school year?	93	86%
4. Has the school used pesticides in the last 2 years?	94	87%
5. Did the school use pesticides exempt from license and notice requirements?	87	81%
6. Did the school use low risk pesticides exempt from specific notice but requiring a certified applicator and IPM?	51	47%
7. Did the school use pesticides with higher risk, requiring IPM, certified applicator, and specific notification?	17	16%

Referring to Question 3. Of those that did send the annual notification within first two weeks of school year as required, did the notification include the following statements and information?

	Number answering yes	Percent of those that sent notification
IPM Policy exists and can be reviewed by contacting the IPM Coordinator	93	100%
A statement that pesticides may periodically be applied	91	98%
The method of notification to be used	91	98%

Of those who indicated a method:

All staff/parents/guardians notified	78	95%
Must sign up for a registry	4	5%

Reports of prior applications are available for review	66	71%
The "Pesticides In Schools Regulations" is available for review	92	99%

Referring to Question 4. Of those that have used pesticides in the last 2 years:

	Number answering yes	Percent of those that had used pesticides
Does the school have records?	70	74%
IPM Records?	63	67%
Label(s)?	39	41%
MSDS?	41	44%
Commercial Applicator records?	48	51%
Were the following steps taken, and recorded, prior to application?		
Monitoring for pests or for conditions conducive to a pest outbreak	74	79%
Identification of the specific pest	75	80%
Determination that the IPM thresholds were exceeded	74	79%
Utilization of practical, effective and affordable non-pesticide control measures	78	83%

Referring to Question 6. Of those that have used low risk pesticides in the last 2 years, were the following used?

- Liquids injected into cracks, crevices or wall voids
- Baits, gels, pastes and granulars in areas inaccessible to students
- Applications when classes not in session,
and label directions concerning re-entry interval were followed

Number answering yes	Percent of those that used low risk pesticide
18	35%
42	82%
29	57%

Maine Board of Pesticides Control



28 State House Station
 Augusta, ME 04333-0028
 Tel: (207) 287-2731
 Fax: (207) 287-7548
 www.thinkfirstspraylast.org

SCHOOL IPM INSPECTION

Individual _____ Title _____
 Superintendent _____
 (If different) _____
 School Name _____ Administrative Unit _____
 Address _____ Phone _____
 Town _____ Zip _____

Date _____ Time _____
 Inspection # _____

Print name of Pesticide Inspector _____ Signature of Pesticide Inspector _____

A. Purpose & Consent **Credentials presented**

This investigation is being conducted by a representative of the Maine Board of Pesticides Control for the purpose of inspecting sites where pesticides are being/have been used, to collect data on their use to determine whether pesticides are being/have been used in compliance with the Federal Insecticide, Fungicide and Rodenticide Act (FIFRA), and/or State Pesticide Statutes and Regulations.
 Routine inspection Violation suspected (Describe suspected violation)

I voluntarily consent to the inspection described above.	Print name	Signature	Date
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B. Required of all schools, regardless if pesticides are used or not used. **C.M.R. 01-026 Chapter 27**

Y N Has an IPM policy been adopted? Y N NA Same for all schools
 Y N Is there an IPM Coordinator on staff? Name _____ Y N Same for all schools
 Y N Was annual notification given to staff/parents/guardians within the first two weeks of the school year?
 Y N An IPM policy exists and can be reviewed by contacting the IPM Coordinator.
 Y N A statement that pesticides may periodically be applied.
 Y N The method of notification to be used. All staff/parents/guardians Only those on a registry
 Y N Reports of prior applications are available for review. (Required to be kept for 2 years.)
 Y N The "Pesticides In Schools Regulation" is available for review.

C. Has the school used pesticides in the last 2 years? Y N If yes, indicate all types used below.

Y N **1. Pesticide Uses Exempt from License and Notice Requirements:** Ready-to-use insecticides to control stinging insects that pose a health threat, disinfectants for routine cleaning and certain paints, stains and wood preservatives. Applicators must follow label directions. There are no further requirements for these pesticides.
 Y N **2. Pesticides with low risk of exposure, requiring IPM and a Commercial Applicator, but no specific notification.**
 Y N Liquids injected into cracks, crevices or wall voids.
 Y N Baits, gels, pastes and granular materials placed in areas inaccessible to students.
 Y N Applications during periods when classes are not scheduled, plus required re-entry time.
 Y N **3. Pesticides with higher risk of exposure, requiring IPM, a Commercial Applicator and specific notification.** (*All other pesticides*)

D. Were the following steps taken, and recorded, prior to any (non-exempt) pesticide application?

Y N NA Monitoring for pests or for conditions conducive to a pest outbreak.
 Y N NA Identification of the specific pest.
 Y N NA Determination that the IPM threshold levels were exceeded.
 Y N NA Utilization of practical, effective and affordable non-pesticide control measures.

E. Application of all (non-exempt) pesticides when classes are regularly scheduled

Y N NA Was notification made Y N 5 days prior? Y N Required information?
 Y N NA Were signs posted? Y N 2 days before and after Y N Required format & content
 Y N Were people in immediate area?
 Y N Does school have records? IPM Records Label(s) MSDS Commercial Applicator records
 Y N Signs are still posted (2 days before and after) for applications made when classes are not regularly scheduled

Comments _____
 Commercial applicator name & company _____ No commercial applicator

Overview of Maine School IPM requirements

All Schools

The following items are required of all public or private school systems, regardless if pesticides are used or not used.

- A written Integrated Pest Management (IPM) policy,
- An staff member appointed as IPM Coordinator to implement the IPM policy,
- Annual notification to staff, parents and guardians within the first two weeks of school.

Urgent Need Pesticides

Schools may apply ready-to-use products to control stinging or biting insects when there is an urgent health or safety need, by following directions on the product label. In addition, schools may use disinfectants during routine cleaning, and paints, stains and wood preservatives that contain anti decay additives. The School IPM regulation does not restrict these uses; State regulations do not require a pesticide applicator license for this use; and no advance notification or record keeping is required.

Licensing

All other pesticides may be applied only by a person having a valid commercial pesticide applicator license in the proper category. This could be a school employee or an outside contractor. Both must follow the same regulations.

Major features of IPM include:

- Records of regular monitoring to detect pests early,
- Non-pesticide control efforts such as sanitation or exclusion for insects, and mechanical control for weeds,
- Use of pesticides only when necessary, and
- Specific notification prior to use of pesticides with higher risk of exposure.

Visit the School IPM website for additional resources
www.thinkfirstspraylast.org/schoolipm

Pesticides exempt from specific notification

Pesticides in the following categories are considered to have little or no potential for exposure, and may be applied without specific notification of each application; however, the annual notification must still be made:

- Pesticides injected into cracks, crevices or wall voids,
- Baits, gels, pastes and granular materials placed in areas inaccessible to students, and
- Indoor application of pesticides with no re-entry period if treated room is restricted for 24 hours

Notification For Other Pesticides

Pesticide applications not described above have more potential for exposure and require specific notification for each application if applied when classes are regularly scheduled:

- Notices must be sent to staff, parents and guardians at least 5 days prior to application. The IPM Policy will determine if this is a universal notification to all staff, parents and guardians, or notification only to those persons that have requested to be on a notification registry.
- Schools must post signs at least 2 working days prior to application. These signs must be at all access points to the treatment area, and in a common area of the school.
- During periods when classes are not regularly scheduled, non-exempt pesticide applications still require posting

IPM Requirements if (non-urgent) pesticides are used

- Pesticides may be used only if non-pesticide methods are not practicable, effective or affordable,
- Applications must not be conducted when people are in the immediate area to be treated, and
- Records must be maintained for two years, and be available to the public upon request:
 - Records supporting pesticide need (Section 5(B) & (G) of the School IPM Rule),
 - Commercial applicator records required by other regulations, and
 - Labels and material safety data sheets for the pesticides used.

Read the regulation for all the details
C.M.R. 01-026 Chapter 27

What is a pesticide?

A pesticide is any natural or man-made product that claims to kill, repel or mitigate a living organism. Pesticides typically used on school properties include ant cups, insect sprays and dusts, weed control products and mouse poisons. Most, but not all, pesticides have an “EPA Reg. No.” on the container label. Disinfectants applied during routine cleaning, as well as certain paints, stains and wood preservatives, are also pesticides but are not regulated under the School IPM Rule.

Appendix 7

SUMMARY OF SCHOOL SURVEYS

The Board of Pesticides Control (BPC) staff collaborated with the Maine Department of Agriculture (MDOA) IPM specialist to conduct surveys of a cross section of Maine K–12 school districts in an effort to gain additional insight about pest management practices in Maine schools. A stratified-random selection process based on the Maine Principal’s Association (MPA) school classification system was used to identify 20 school districts or private schools for the survey that have at least one high school and one middle school. Ultimately, nine districts participated in the survey.

A list of key questions and data was then developed to use at each school district where on-site interviews were conducted with school officials knowledgeable about outdoor grounds maintenance practices.

Method for selecting schools

Public schools

Lists of schools and enrollment numbers were obtained from the Maine Department of Education (MDOE). High schools were divided into categories based upon the MPA Sports Classification Proposed Enrollment Cut-Offs for Baseball for 2010–2011. Schools with over 725 students were determined Class A, 400–724 students, Class B, 200–399 students, class C, and fewer than 200 students, Class D. By this method, 24 public high schools were determined as Class A, 39 as Class B, 33 as Class C, and 36 as class D. Each school was assigned a number and a random number generator used for selection. Three schools from each of Classes A, C and D, and four schools from Class B were selected for surveys. The random selection included a good geographic distribution, with the exception of one case, where the third selection was in the same county as the first, so an alternate was randomly selected. This original list of 13 schools represented 13 counties. On the recommendation of the MDOE, it was decided that districts should be given the opportunity to decline to participate, which all of the Class D schools did, as well as two higher division districts. Ultimately, nine districts were visited (*Table 1*).

Non-public schools

Non-public schools were randomly selected using a similar method. Schools were divided into categories defined by the MDOE: private non-sectarian, private sectarian, private special purpose and state operated. Five were selected to be surveyed; one survey from this group was completed.

Although the high school was used for selection, the surveys covered the entire district. The chart below details the districts surveyed. If any were in the district, a middle school and an elementary school were visited as well as the high school.

TABLE 1. SCHOOL DISTRICTS PARTICIPATING IN ON-SITE SURVEY			
County	Type	Class*	Number of Schools in District
Aroostook	Public	C	5
Cumberland	Public	A	6
Cumberland	Private	C	3
Kennebec	Public	A	8
Knox	Public	C	10
Lincoln	Public	B	7
Penobscot	Public	B	3
Somerset	Public	A	6
Waldo	Public	B	13

**Based on MPA sizes for high school athletics:*

Class A >725 students

Class B 400–724 students

Class C 200–399 students

Method of survey

One or more MDOA staff members, with familiarity and knowledge about school IPM, met with school personnel responsible for making decisions about care of sports fields, playgrounds and lawns. In-depth interviews and review of records were conducted as well as inspections of playing fields, lawns, gardens, playgrounds, landscape areas, fence lines, greenhouses and nature trails. Rather than follow a questionnaire, interviewers led school personnel in a conversation to elicit information.

Summary of information

Most of the information garnered from these surveys does not lend itself to statistical analysis; situations are so diverse as to make comparisons difficult. The MDOA staff instead compared notes and wrote the “observations from the on-site interviews and surveys” found below. Some information which is quantifiable is shown here.

Job Title of IPM Coordinator	
Facilities Manager of Director	5
Grounds Supervisor	1
Director of Buildings, Transportation and Grounds	1
Director of Finance and Projects	1
Operations Director	1
Services Contracted with Grounds Management Professional	
Pesticide Applications	9
Aerating	5
Fertilizing	5
Seeding	7
Pesticide Applications	
Preemergent varsity football/soccer fields once/year	4
Preemergent varsity baseball/softball diamonds once/year	6
Preemergent varsity baseball/softball diamonds twice/year	1
Broadleaf herbicide to all fields (high school and middle school)	
Once every 1–3 years	4
Once every 2–5 years	1
Once every 5 years	1
Organic fertilizer/control mix twice/year to all fields	1
Fence lines every 1–2 years	3
Grub control once/year	2
Poison ivy control once/year	1

Observations from the on-site interviews and surveys

Overall findings

- Wide variation in interest/ability of IPM coordinators
 - Some, especially if they are the facilities director, coordinate well on both indoor and outdoor situations.
 - Smaller school districts seem to have less difficulty, in general, with communication.
 - Some have no knowledge of, or control over, what happens on school grounds.
 - Athletic directors and coaches are often making decisions about athletic fields rather than IPM coordinators.
 - School district consolidations may have impacted IPM programs.
 - Some coordinators are only record keepers right now, not decision makers.
 - Some IPM coordinators don't even realize they have the job; some know but don't understand what it means.
- Different pest management professionals are contracted with for structural versus grounds management.

Indoor pesticide applications

- All schools we visited appeared to have a good system for monitoring and reporting pest problems and are implementing most recommended IPM processes. These schools were found to be mostly in compliance with state and federal regulations, although there were some gaps in record-keeping requirements. About half of the schools use an electronic work order system which keeps records, but in a different setting, not specifically as Chapter 27 records. Other schools use e-mail or direct communication, but do not keep records.

Lawns, playgrounds and playing fields

- Most outdoor pesticide applications involve playing fields. Rarely, is a lawn application done. There is no evidence of applications on playgrounds; all the schools visited had some type of mulch around playground equipment to block weeds.
- Cost is one of the primary considerations behind grounds management decisions.
 - Cost determines level of service (i.e., number of aeration, fertilizing, herbicide applications versus what is recommended) and on which fields
 - Schools are generally more willing to pay for services to varsity athletic fields.
 - Some schools think it is less expensive to hire everything done by a pest management company, others think it is less expensive to buy equipment and have staff do what they can (aerating, fertilizing, seeding).
 - Some schools prefer to leave everything to grounds management professionals so as to limit their own (perceived) liability and/or level of expertise needed.
- Aesthetics and playability of varsity sports fields is another major consideration in grounds management decisions.
 - Varsity athletics attract parents, fans and revenue.
 - The frequency of use and type of play is hard on the turf, and requires more maintenance than other turf areas.
- Records are generally poor.
 - Schools rely on grounds management professionals to keep application records, but this is not always a reliable method.
 - Most schools have no IPM records for grounds management.
- Most schools rely on professionals for advice. In some cases they provide a schedule and school personnel do the actual work of aerating, fertilizing and overseeding; in other cases the professional is hired to do this work.
- Records and interviews indicate that schools often try to schedule pesticide applications during vacations when fewer students are present and 5-day advance notice is not required. This is done both to avoid the notice requirement and to reduce exposure.
- Confusion remains regarding notification exemptions. Some schools think it is permissible to do applications over a weekend without doing the 5-day notice, while others avoid the need for the 5-day advance notice by scheduling applications during summer vacations, but fail to post the area two days before and after the application.

Gardens, greenhouses, nature trails

- There was no evidence of pesticide use in greenhouses and gardens, however, records are poor.
- The only issue noted about a nature trail was an untreated patch of poison ivy which was clearly marked with a sign.

Examples of pest issues and IPM solutions used by schools

- Rodents near a garage where they were storing returnables—stopped storing returnables
- Field mice in courtyard —live trapping, cutting grass more often, planning to replace grass with stones
- Stinging insects near trash—made sure containers were consistently covered
- Field mice inside building—determined it was caused by doors being propped open during sporting events, and made sure they were kept closed
- Weeds in flower gardens—annual event to have kids pull weeds by hand
- Poison ivy on school grounds—dug out
- Skunks on fields—live-trapped, and plan to deal with grubs in the spring