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## S435 BMPs for Pesticides and an Integrated Pest Management Program

**Description of Pollutant Sources:** Pesticides include herbicides, rodenticides, insecticides, fungicides, etc. Examples of pesticide uses include:

- Weed control on golf course lawns, access roads, utility corridors and landscaping.
- Sap stain and insect control on lumber and logs.
- Rooftop moss removal.
- Killing nuisance rodents.
- Fungicide application to patio decks.

It is possible to release toxic pesticides such as pentachlorophenol, carbamates, and organometallics to the environment by leaching and dripping from treated parts, container leaks, product misuse, and outside storage of pesticide contaminated materials and equipment. Poor management of pesticides can cause appreciable stormwater contamination and unintended impacts to non-targeted organisms.

**Pollutant Control Approach:** Control of pesticide applications to prevent contamination of stormwater. Develop and implement an Integrated Pest Management (IPM) Plan. Carefully apply pesticides, in accordance with label requirements.

### Applicable Operational BMPs:

- Train employees on proper application of pesticides and disposal practices.
- Follow manufacturers' application guidelines and label requirements.
- Do not apply pesticides in quantities that exceed the limits on the product the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA) label. Avoid excessive application of chemical.
- Conduct spray applications during weather conditions as specified in the label requirements and applicable local and state regulations. Do not apply during rain or immediately before expected rain (unless the label directs such timing).
- Clean up any spilled pesticides immediately. Do not hose down to a storm drain, conveyance ditch, or water body.
- Remove weeds/vegetation in stormwater ditches, stormwater facilities, and drainage systems by hand or other mechanical means and only use pesticides as a last resort.

- Flag all sensitive areas including wells, creeks, and wetlands prior to spraying.
- Post notices and delineate the spray area prior to the application, as required by the local jurisdiction, or by Ecology.
- Refer to [S411 BMPs for Landscaping and Lawn / Vegetation Management](#) and use pesticides only as a last resort.
- Conduct any pest control activity at the life stage when the pest is most vulnerable. For example, if it is necessary to use a *Bacillus thuringiensis* application to control tent caterpillars, apply it to the material before the caterpillars cocoon or it will be ineffective. Any method used should be site-specific and not used wholesale over a wide area.
- Mix pesticides and clean the application equipment under cover in an area where accidental spills will not enter surface or ground waters, and will not contaminate the soil.
- The pesticide application equipment must be capable of immediate shutoff in the event of an emergency.
- Implement a pesticide-use plan and include at a minimum:
  - A list of selected pesticides and their specific uses.
  - Brands and formulations of the pesticides.
  - Application methods and quantities to be used.
  - Equipment use and maintenance procedures.
  - Safety, storage, and disposal methods.
  - Monitoring, record keeping, and public notice procedures. All procedures shall conform to the requirements of [Chapter 17.21 RCW](#) and [Chapter 16-228 WAC](#).
- Develop and implement an Integrated Pest Management (IPM) program if pests are present. The following steps are adapted from ([Daar, 1992](#)).
  - **Step One:** Correctly identify problem pests and understand their life cycle.
    - Learn more about the pest.
    - Observe it and pay attention to any damage that may be occurring.
    - Learn about the life cycle.
    - Many pests are only a problem during certain seasons, or can only be treated effectively in certain phases of the life cycle.
  - **Step Two:** Establish tolerance thresholds for pests.
    - Decide on the level of infestation that must be exceeded before treatment needs to be considered. Pest populations under this threshold should be monitored but don't need

treatment.

- **Step Three:** Monitor to detect and prevent pest problems.
  - Monitor regularly to anticipate and prevent major pest outbreaks.
  - Conduct a visual evaluation of the lawn or landscape's condition. Take a few minutes before mowing to walk around and look for problems.
  - Keep a notebook, record when and where a problem occurs, then monitor for it at about the same time in future years.
  - Specific monitoring techniques can be used in the appropriate season for some potential problem pests, such as European crane fly.
- **Step Four:** Modify the maintenance program to promote healthy plants and discourage pests.
  - Review your landscape maintenance practices to see if they can be modified to prevent or reduce the problem.
  - A healthy landscape is resistant to most pest problems. Lawn aeration and overseeding along with proper mowing height, fertilization, and irrigation will help the grass out-compete weeds.
  - Correcting drainage problems and letting soil dry out between waterings in the summer may reduce the number of crane-fly larvae that survive.
- **Step Five:** If pests exceed the tolerance thresholds:
  - Consider the most effective management options concurrent with reducing impacts to the environment. This may mean chemical pesticides are the best option in some circumstances.
  - Consider the use of physical, mechanical, or biological controls.
  - Study to determine what products are available and choose a product that is the least toxic and has the least non-target impact.
- **Step Six:** Evaluate and record the effectiveness of the control, and modify maintenance practices to support lawn or landscape recovery and prevent recurrence.
  - Keep records!
  - Note when, where, and what symptoms occurred, or when monitoring revealed a potential pest problem.
  - Note what controls were applied and when, and the effectiveness of the control.
  - Monitor next year for the same problems.

## Recommended Additional Operational BMPs:

- Choose the least toxic pesticide available that is capable of reducing the infestation to acceptable levels. The pesticide should readily degrade in the environment and/or have properties that strongly bind it to the soil.
- Choose pesticides categorized by EPA as reduced risk. For example, the herbicide imazamox.
- When possible, apply pesticides during the dry season so that the pesticide residue is degraded prior to the next rain event.
- If possible, do not spray pesticides within 100 feet of water bodies. Spraying pesticides within 100 feet of water bodies including any drainage ditch or channel that leads to open water may have additional regulatory requirements beyond just following the pesticide product label. Additional requirements may include:
  - Obtaining a discharge permit from Ecology.
  - Obtaining a permit from the local jurisdiction.
  - Using an aquatic labeled pesticide and adjuvant.
- Use manual pest control strategies such as physically scraping moss from rooftops, high-pressure sprayers to remove moss, and rodent traps.
- Consider alternatives to the use of pesticides such as covering or harvesting weeds, substitute vegetative growth, and manual weed control/moss removal.
- Consider the use of soil amendments, such as compost, that are known to control some common diseases in plants, such as Pythium root rot, ashy stem blight, and parasitic nematodes.
- Once a pesticide is applied, evaluate its effectiveness for possible improvement. Records should be kept showing the effectiveness of the pesticides applied.
- Follow the FIFRA label requirements for disposal. If the FIFRA label does not have disposal requirements the rinseate from equipment cleaning and/or triple-rinsing of pesticide containers should be used as product or recycled into product.
- Develop an and adaptive management plan and annual evaluation procedure including: (adapted from [\(Daar, 1992\)](#))
  - A review of the effectiveness of pesticide applications.
  - Impact on buffers and sensitive areas, including potable wells. If individual or public potable wells are located in the proximity of commercial pesticide applications, contact the regional Ecology hydrogeologist to determine if additional pesticide application control measures are necessary.
  - Public concerns.

- o Recent toxicological information on pesticides used/proposed for use.

## **Additional Information**

For more information, refer to the Pesticide Information Center Online (PICOL) Databases at <http://cru66.cahe.wsu.edu/LabelTolerance.html>.

Washington pesticide law requires most businesses that commercially apply pesticides to the property of another to be licensed as a Commercial Applicator from the Washington State Department of Agriculture.

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### **Washington State Department of Ecology**

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