APPENDIX H: PREVENTING DRIFT

Drift can potentially cause not only water quality impacts, but also damage to susceptible off-target crops, and a lower than intended rate to the turfgrass, thus reducing the effectiveness of the pesticide. There are two types of drift, airborne (spray) drift and vapor drift.

H.1 Spray Drift

Spray Drift is influenced by many inter-related factors including droplet size, nozzle type and size, sprayer design, weather conditions and the operator.

H.1.1 Droplet Size

Lower spray volumes can result in smaller droplets that enhance leaf coverage although there is a limit to droplet size due to drift. Droplets under 150 microns generally pose the greatest hazard; droplets less than 50 microns have insufficient momentum for impaction as they remain suspended in the air indefinitely or until they evaporate. Research in England concluded that a 100 micron droplet takes 11 seconds approximately to fall ten feet in still air; when a similar size droplet is released into a 5mph wind drifts about 75 feet before hitting the ground. The higher the operating pressure, the smaller the droplet. Conversely, low pressure produces large droplets that may bounce off the target. Certain spray surfactants can change the droplet spectrum, reducing the number of driftable droplets.

H.1.2 Nozzle Type and Size

Correct nozzle selection is one of the most important, yet inexpensive, aspects of pesticide application. A nozzle's droplet size spectrum determines deposition and drift. Conventional flat fan nozzles fitted to a turfgrass sprayer produces droplets in the range of 10 – 450 microns. (Note: 25,000 microns = 1 inch.) Drift is a concern with droplets less than 100 microns. Increasing the Volume Median Diameter (VMD) reduces drift, but droplets that are too bounce off the leaves to the ground.

H.1.3 Sprayer Design

Shields are better at targeting the spray into the grass, reducing drift and increasing deposition. They vary from the simple to the complex. Shielded sprayers allow managers to apply pesticides in variable weather conditions.

H.1.4 Weather Conditions

Wind speed and direction, relative humidity, temperature and atmospheric stability affects drift. Applying the correct product to the correct target at the correct time with the correct equipment is the key to good spraying.

H.1.5 Operator

Correct sprayer calibration ensures that all the nozzles are discharging the correct amount of liquid at the correct distance and angle to the target and at the correct forward speed.

H.2 Vapor Drift

The amount of vapor drift depends upon a pesticide's volatility and atmospheric conditions such as humidity, temperature. Turfgrass pesticides with known volatility should be avoided. In some cases, the pesticide label may indicate low volatility. However, low volatility does not mean that a chemical will not volatilize under conducive conditions, such as high temperatures or low relative humidity.

H.3 Best Practices for Spraying

Before spraying:

1. Train the operator to use the sprayer correctly.
2. Plan the spraying operation; consider the use of spray instruction cards as a good management tool.
3. Read and follow the pesticide label.
4. Select the correct nozzle for the target. Adjust the size and position of the nozzles to achieve correct distribution within the grass canopy,
5. Consider the use of sprayer nozzles which direct the spray to the target.
6. Consider spray additives to reduce drift.
7. Improve spraying logistics to ensure adequate time to spray within 'ideal' conditions.
8. Only spray when weather conditions are ideal; avoid spraying on days when conditions are favorable for atmospheric inversion or wind drift.
9. Calibrate the sprayer with water to ensure that everything is working correctly.

During spraying:

1. Stay alert: ensure the spray is not allowed to drift on to non-target areas and watch for changes in wind speed and direction.
2. Keep spray pressure as low as possible and ensure an accurate gauge is used.
3. Maintain a constant speed and pressure. If an automatic regulator is fitted, remember, small increases in speed result in large increases in pressure.
4. Avoid spraying near sensitive crops or watercourses; use a buffer zone.