

TurfGrass TRENDS



Volume 6, Issue 4

April 1997

Insecticide Formulations

Patricia J. Vittum
University of Massachusetts

Pesticides, including insecticides, are packaged in a variety of forms. The technical grade, or "pure" material, usually is not appropriate for use by a pesticide applicator because the concentrated material might be very toxic, insoluble in water, or unstable in the environment. Specially trained scientists (known as "formulation chemists") work with the technical grade material to determine how best to formulate the pesticide so that it can be applied to the intended target with minimal risk to the applicator or the environment. They use a variety of solvents, diluting agents, or stabilizing compounds to produce a product that can be applied through traditional application equipment.

All pesticide formulations contain some quantity of an active ingredient (the actual killing agent), usually 1 to 80 percent of the total material, while the remainder is inert ingredients. These inert ingredients do not contribute to the pesticidal action of the compound, but they are not necessarily "benign" either. For example, some solvents that are used as inert ingredients tend to be phytotoxic to plants, and others can cause various animal health problems. Some common inert ingredients include talc (used as a base for incorporating the

active ingredient into a dust for dry application), corn cob or bentonite clay (used to form granules on which the active ingredient is adsorbed), petroleum-based solvents to retain the active ingredient into solution (technically, into emulsion) in water, or wetting agents to increase the "sticking power" of the active ingredient on the plant foliage.

Formulations are developed to make the product safer and more convenient to use.

Micro-Encapsulated Suspension

Emulsifiable Concentrate

Dispersible Granule

Wettable Powder

Soluble Powder

Dry Flowable

Flowable

Granule

IN THIS ISSUE

- **Pesticide Formulations1**
 - Solid vs. Sprayable
 - Calculations for Dry Formulations
 - Calculations for Liquid Formulations
 - Terms to Know
 - Additional Reading
- **Relative Hazards Of Turf and Ornamental Pesticides to Non-Target Species9**
 - Methods of Determining Toxicity
 - Toxicity to Birds
 - Toxicity to Fish
 - Toxicity to Earthworms
- **Turfgrass Response to Controlled-Release Fertilizers13**
 - N Release and Quality Response
 - Controlled-Release Urea Sources Evaluated