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Hawaii Department of Agriculture
Division of Plant Industry
1428 S. King Street
Honolulu, HI 96814

STUDY MATERIAL FOR PESTICIDE DEALER REPRESENTATIVE (August 10, 2010)

A summary of the Hawaii Pesticide Law, Chapter 149A, HRS and the Administrative Rules, Chapter 66, Pesticides.

Legislation

Hawaii's Pesticide Law (Chapter 149A, HRS) was enacted into law in May 1972.

The Hawaii Pesticide Law is patterned after the Federal Environmental Pesticide Control Act (FEPCA) of 1972. This Federal law is commonly referred to as FIFRA or the Federal Insecticide, Fungicide, and Rodenticide Act of 1972, as amended. The Federal law has precedent over State laws except that State laws may be more stringent in certain respects than the Federal law. The Federal pesticide law is administered by the U.S. Environmental Protection Agency and the Hawaii Pesticide Law by the Pesticides Branch of the Hawaii Department of Agriculture.

Definitions

The following are important definitions in the Hawaii Pesticides Law and Administrative Rules with which you should be familiar:

1. "Active ingredient" means:
 - a. In the case of a pesticide other than a plant regulator, defoliant, or desiccant, an ingredient which will prevent, destroy, repel, or mitigate any pest;
 - b. In the case of a plant regulator, an ingredient which, through physiological action, will accelerate or retard the rate of growth or maturation or otherwise alter the behavior of ornamental or crop plants or the produce thereof;
 - c. In the case of a defoliant, an ingredient which will cause the leaves or foliage to drop from a plant; and
 - d. In the case of a desiccant, an ingredient which will artificially accelerate the drying of plant tissues.
2. "Certification" means the authorization granted by the state or federal government to a person to use, handle, or supervise the use of restricted use pesticides.

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3. “Certified Pesticide Applicator” means any individual who is certified under section 149A-33(1) as authorized to use or supervise the use of any pesticide which is classified for restricted use.
4. “Commercial Applicator” or “Commercial Pesticide Applicator” means a certified applicator, whether or not a private applicator with respect to some uses, who uses or supervises the use of any pesticide which is classified for restricted use for any purposes or on any property other than as provided by the definition of “Private Pesticide Applicator” in section 149A-2, Hawaii Revised Statutes.
5. “Competent” means the state of being able and qualified to perform a particular function in pesticide application, the degree of competence being directly related to the nature of the activity and the associated responsibility.
6. “General Use Pesticide” means a pesticide other than one designated as restricted use pesticide.
7. “Label” means the written, printed, or graphic matter on or attached to the pesticide or device or any of its containers or wrappers.
8. “Licensed pesticide dealer representative” means a person authorized to sell restricted use pesticides in a licensed sales outlet and who has successfully passed a written examination required by the head and obtained a license pursuant to section 4-66-52.
9. “Licensed sales outlet” or “Dealer” means a specified site authorized by permit to sell or distribute restricted use pesticides pursuant to section 149A-17, Hawaii Revised Statutes, where restricted use pesticides are kept for sale or distribution and where records of such sale, distribution or disposition of restricted use pesticides are kept and that has been licensed pursuant to section 4-66-52.
10. “Nonrestricted Use Pesticide” means a pesticide other than one designated as restricted use pesticide.
11. “Pest” means any insect, rodent, nematode, fungus, weed, or any other form of terrestrial or aquatic plant or animal life or virus, bacterium, or any other microorganism, except viruses, bacterium, or any other microorganism on or in living humans or other living animals, which the Administrator of the United States Environmental Protection Agency determines to be a pest pursuant to the Federal, Insecticide, Fungicide and Rodenticide Act.

12. "Pesticide" means any substance or mixture of substances intended for preventing, destroying, repelling, or mitigating any pest, and any substance or mixture of substances intended for use as an attractant, plant regulator, defoliant, or desiccant. A product shall be deemed to be a pesticide regardless of whether it is intended for use as packaged, or as a dilution or mixture with substances such as carriers or baits. Products not considered pesticides include:
 - a. Deodorants, bleaching agents, and cleaning agents for which no pesticidal claims are made or implied;
 - b. Embalming fluids;
 - c. Building materials which have been treated to protect the material itself against any pest and bear no claims for protection of other surfaces or objects;
 - d. Fabrics which have been treated to protect the fabric itself from insects, fungi, or any other pests;
 - e. Fertilizer and other plant nutrients; and
 - f. Products intended only for use after further processing or manufacturing such as grinding to dust or other operations.
13. "Private pesticide applicator" or private applicator means a certified pesticide applicator who uses or supervises the use of any pesticide which is classified for restricted use for purposes of producing any agricultural commodity on property owned or rented by the applicator or the applicator's employer if applied without compensation other than trading of personal services between producers of agricultural commodities on the property of another person.
14. "Registrant" means the person registering or licensing any pesticide pursuant to this chapter.
15. Reportable Quantity (RQ) – An amount of a Superfund hazardous substance or "Extremely Hazardous Substance" (EHS) that, if released (i.e., spilled), must be reported under the emergency reporting requirements of the Emergency Planning and Community Right-to-Know Act (EPCRA).
16. "Restricted Use Pesticide" means:
 - a. A pesticide or pesticide use classified by the Administrator, EPA, for use by certified applicators or competent persons under their direct supervision and so designated on its label; or
 - b. A pesticide or pesticide use classified by the board for the use by certified applicators or competent persons under their direct supervision.
17. Threshold Planning Quantity (TPQ) – The amount (in pounds) of an extremely hazardous substance present at a facility above which the facility's owner / operator must give emergency planning notification to the State Emergency Response Commission (SERC) and the Local Emergency Planning Committee (LEPC).

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18. “Under the direct supervision of a certified applicator” means, unless otherwise prescribed by its labeling, a pesticide shall be considered to be applied under the direct supervision of a certified applicator if it is applied by a competent person acting under the instructions and control of a certified applicator who is available if and when needed, even though the certified applicator is not physically present at the time and place the pesticide is applied.

Pesticide Product Licensing

Any pesticide which is received, used, sold, offered for sale, or distributed within Hawaii must first be licensed by the Hawaii State Department of Agriculture even if it is registered with the Federal Environmental Protection Agency.

Pesticides must be sold in the registrant’s or manufacturer’s original unbroken container and must have attached to it a label showing, clearly and prominently, the following required information:

- a. The name, brand or trademark under which the pesticide is sold as prescribed in section 4-66-5;
- b. The name and address of the manufacturer, registrant or person for whom produced as prescribed in section 4-66-6;
- c. Net contents, as prescribed in section 4-66-7;
- d. The product registration number as prescribed in section 4-66-8;
- e. The producing establishment number as prescribed in section 4-66-9;
- f. An Ingredient statement, prescribed in section 4-66-10 to section 4-66-16;
- g. A Warning or precautionary statements as prescribed in section 4-66-17 to section 4-66-19;
- h. Directions for use as prescribed in section 4-66-20 to section 4-66-23; and
- i. The use classification as prescribed in section 4-66-24.

If the pesticide is a substance highly toxic to man, the label must also have the skull and crossbones, the word ”Poison” prominently in red, on a background of contrasting color and an antidote statement.

Labels and Labeling

What is a label? What is labeling? They are similar words, but they do not mean exactly the same thing.

The **Label** is the information printed on the can, box or bag of the pesticide and serves several purposes.

- To the manufacturer, the label is a “license to sell.”
- To the State or Federal regulatory agency, the label is a way to control production, distribution, storage, sale, use, and disposal of the products. It also informs users about necessary safety and environmental precautions.
- To the buyer or applicator, the label is the best source of information needed to use the product safely.

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Labels and labeling must not differ in meaning from the information that the manufacturer submitted to the EPA at the time it was registered.

Labeling is defined as all labels and other written, printed, or graphic matter accompanying the pesticide or device at any time of to which reference is made on the label or in literature accompanying the pesticide or device, except to current official publications of the EPA, the U.S. Departments of Agriculture and the Interior, the U.S. Department of Health and Human Services, state experiment stations, state agricultural colleges, or other similar federal or state institutions or agencies authorized by law to conduct research in the field of pesticides.

All labels will have a basic set of information required by law. This section will cover those items as well as other information.

Parts of the Label

Brand Name - Every product has its own brand name. It is displayed prominently on the front panel and is the most advertised and identifiable name for the product.

Common Name - This is the name for the chemical that identifies the active ingredient in the product (for example carbaryl and malathion). A chemical manufactured by more than one company may be sold under several brand names, but they would reflect the same common name.

Ingredient Statement – Every pesticide label must list the ingredients that are in the product. The statement is divided into two sections; **Active** ingredients and **Inert** ingredients. The active ingredient is listed by its common and/or chemical name along with the amount (listed as percentage) contained in the product. The inert ingredients only need to show the amount contained in the product and are not required to be identified by name. The active and inert ingredient percentages must total 100%.

For example:

Active Ingredient:

Carbaryl (1-naphthyl N-methylcarbamate).....5.0%

Inert Ingredients:.....95.0%

Total: 100%

Net Contents – This tells you how much is in the container and can be expressed in gallons, pints, pounds, quarts, or any other standard unit of measure.

Name and Address of Manufacturer or Producer – This must be identified on the label so one knows who to contact for additional information. An unqualified name and address on the label shall be considered that of the producer. If the name on the label is not the producer, it must be qualified by appropriate wording such as “packed for...”, “distributed by.....”, or “sold by.....” to show that the name is not that of the producer.

Warning and Precautions – By their nature, all pesticides are toxic to some degree. You can determine the degree of hazard of a product by reading the signal words, symbols, and environmental warnings on the label.

Signal Words: This tells you how toxic the product is and is one of the most important parts of the pesticide label. The signal words that follow are set by law and must be accurately listed on the pesticide label.

Signal Word	Toxicity	Approximate Amount Needed to Kill an Average Person When Taken Orally
DANGER / POISON	Highly Toxic	A taste to a teaspoonful
WARNING	Moderately Toxic	A teaspoonful to a tablespoonful
CAUTION	Slightly to Relatively Nontoxic	An ounce to a pint
All products must bear the statement, “Keep Out of Reach of Children.”		

Symbols - One of the best ways to catch a person’s eye is with pictures or symbols. This is why a skull and crossbones symbol is used on highly acutely toxic materials along with the signal word “DANGER”.

In addition, some product labels use other symbols to warn people against drinking, spilling, or breathing in the toxic material.

Pay attention to symbols on the label. They are there to remind you that the contents could make you sick or even kill you.

Environmental Warnings – Labels contain environmental warnings that must be read and followed. Here are some examples:

“This products is highly toxic to bees exposed to direct treatment on residues on crops.”

“Do not contaminate water by cleaning of equipment or disposal of wastes.”

“Do not apply where runoff is likely to occur.”

Labels may also contain general warnings against exposure to birds, fish, and wildlife.

Statement of Practical Treatment (First Aid) – Most pesticide products are required to include instructions on how to respond to an emergency exposure involving that product. The instructions usually include first aid measures and may include instructions to seek medical help. If the Statement of Practical Treatment is not located on the front panel, a statement on the front panel must refer the user to the section on the label or labeling where the Statement of Practical Treatment may be found. Remember that the pesticide label is the most important information you can take to the physician when a person is suspected of being poisoning.

Classification of Pesticide Uses – EPA categorizes every use of every pesticide as either “restricted use” or “unclassified” (non-restricted use). Often times all uses of a particular formulation are classified as restricted or all unclassified. Sometimes, however, certain uses of a formulation are restricted and other uses of the same chemical are not. In these cases, the directions for use for the two classifications must be clearly separate and thus, entirely different packaging and labeling are used. Factors considered when classifying a pesticide use include:

- Toxicity of the pesticide
- How it is used, and
- Potential adverse effects on the environment.

Restricted Use – The label will state “Restricted Use Pesticide” in a box at the top of the front panel. Below this heading may be a statement describing the reason for the restricted use classification. Usually another statement will describe the category of certified applicator who can purchase and use the product. For example:

<p style="text-align: center;">RESTRICTED USE PESTICIDE Due to very high toxicity to humans and birds.</p> <p style="text-align: center;">For retail sale to and use by certified applicators or persons under their direct supervision and only for those uses covered by the certified applicator’s certification.</p>

Non-classified or Nonrestricted Use – These products have no designation on the product label and can generally be sold to and used by the general public. However, you need to be aware of a few exceptions. To limit distribution of some non-restricted products, manufacturers and registrants will place restrictive statements on the front panel. For example:

“For Sale to and Use by Commercial Applicators Only”

Although these products may not be classified as restricted use pesticides “Commercial Applicator” is defined in the pesticides rules and is thus enforceable. Therefore, the statement, “For Sale to and Use by Commercial Applicators Only” means the product can only be sold to and used by a commercial applicator as defined in the Administrative Rules, section 4-66-2. Since the product is not classified as an RUP, record of its sale is not required to be submitted to the Pesticides Branch.

Direction for Use – On every pesticide label, directly under the heading "Directions for Use", is the statement "It is a violation of Federal law to use this product in a manner inconsistent with its labeling." The Directions for Use contains specific directions for using the product (application sites, target pests, dilution rates, rate of application, means of application, etc.). It also contains sections on storage and disposal and may contain a section on entry into treated areas after a pesticide application.

Pesticide dealers should familiarize themselves with the products they sell to help avoid selling the "wrong" pesticide (site or crop not on label) to customers. In general, it is legal to apply a pesticide against a pest not listed on the label as long as the crop or site is listed.

Storage and Disposal – All pesticide labeling contains some instructions for storing the pesticide. These may include both general statements, such as "Keep out of reach of children and pets," and specific directions, such as "Do not store in temperatures below 32°F." Pesticide labeling also contains some general information about how to dispose of excess pesticide and the pesticide container in ways that are acceptable under federal regulations. State and local laws vary, therefore, the labeling usually does not give exact disposal instructions and may direct applicators to contact local authorities for guidance.

Penalties

Pesticide dealers, distributors, registrants and licensed dealer representatives who make RUPs available to noncertified applicators, are subject to civil penalties that may be as much as \$5,000 for each offense with license suspension.

Pesticide dealers, distributors, and registrants who sell or distribute an unlicensed pesticides are subject to civil penalties that may be as much as \$1,000 for each offense. This penalty is normally assessed on the local outlet.

Some violations of the law may also result in criminal penalties which can be as much as \$25,000 and/or 1 year in prison.

Know Your Pesticides

Pesticides are grouped into a number of different classes or types. The common ones being insecticides, herbicides, fungicides and rodenticides. Pesticides come in various forms ranging from dry powders that are ready-to-use, liquid concentrates requiring mixing, aerosol sprays, and ant and roach baits. Familiarize yourself and your employees of the hazards of pesticides and what to do in the event of an accidental spill.

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Types of Pesticides

“Pesticide” is a general term that includes a number of pest specific type control products. Below are some examples:

Type of Pesticide	Pests Controlled or Reason for Use
Insecticide	Insects and other related jointed legged pests such as: ticks, spiders, centipedes, sow bugs and pill bugs.
Herbicide	Grassy and woody weeds
Fungicide	Fungi
Miticide or Acaricide	Mites
Nematicide	Nematodes (round worms)
Bactericide	Bacteria
Rodenticide	Rodents
Piscicide	Fish
Avicide	Birds
Molluscicide	Mollusks, snails, slugs, barnacles
Plant Growth Regulator	Used to modify plant growth; slow, speed up, initiate flowering, etc.
Defoliant	Used to remove unwanted plant growth.
Desiccant	Used to kill plant foliage to make harvesting easier.
Repellent	Used to divert a pest from a crop, animal, product or structure.
Attractant	Used to lure a pest to a location.

Chemical Nature of Pesticides

Inorganic pesticides. These are mined from the earth and ground into a fine powder. Some work as a poison while other work by physically interfering with the pest. Examples include: arsenic, borates, copper, silicates, sulfur and zinc.

Organic pesticides. These are extracted from plants or plant parts. Examples include rotenone, pyrethrins, neem and nicotine.

Synthetic pesticides. These are manufactured in a laboratory and generally grouped into similar chemical classes such as organochlorines, organophosphates, pyrethroids, or carbamates. Examples include: captan, carbaryl, fipronil and imidacloprid.

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Biorational pesticides. Synthetic, organic, or inorganic pesticides that are both low toxicity and exhibit low impact on the environment and to non-target species. These include oils, insecticidal soaps, microbials (*Bacillus thuringiensis*, and entomopathogenic nematodes), botanical (plant-based) and insect growth regulators.

Pesticidal Action (How They Work):

Protectant – Applied to plants, animals, structures and products to prevent pests from becoming establishing.

Growth Regulator – Applied to control pests by rendering them incapable of normal growth.

Contact pesticide – Kills by simply contacting the pest.

Systemic pesticide – Pesticide is absorbed the plant or animal and kills the pest without harming the host plant or animal. In the case of a herbicide, the pesticide is absorbed by the plant and killed at the root.

Fumigant – In a gaseous state, fumigants can penetrate soil, stored and packaged commodities, and kills pests by contact.

Read the label to see how the pesticide you plan to use works.

Formulation and Principles in Use

Active ingredients are usually mixed with other substances to make them safer to handle and easier to apply accurately. When an active ingredient is put into a mixture, it is called a formulation. A formulation is made up of active and inert ingredients. The final product is packaged ready-to-use (no mixing required) or for dilution with water or other diluents.

Different Liquid Formulations:

Emulsifiable Concentrates (EC or E): Emulsifiable concentrates are liquid formulations where the active ingredient has been dissolved in oil or other solvents along with an agent that allows the formulation to be mixed with oil or water to form an emulsion. Each gallon of EC usually contains 25 to 75 percent (2 to 8 pounds) active ingredient. They are used against agricultural, ornamental and turf, forestry, structural, food processing, livestock, and public health pests. They are adaptive to many types of application equipment from small portable sprayers to hydraulic sprayers, low-volume ground sprayers, mist blowers, and low volume aircraft sprayers.

Advantages:

- Relatively easy to handle, transport and store.
- Little agitation required; will not settle out or separate when equipment is running.
- Not abrasive.
- Will not plug screens or nozzles.
- Little visible residue on treated surfaces.

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Disadvantages:

- High concentration makes it easy to overdose or underdose through mixing or calibration errors.
- May result in phytotoxicity or damage to plants.
- Easily absorbed through skin of humans and animals.
- Solvents may cause rubber or plastic hoses, gaskets, and pump parts and surfaces to deteriorate.
- May cause pitting or discoloration of painted finishes.
- Flammable – should be used and stored away from heat or open flame.
- May be corrosive.

Ultra Low Volume (ULV) Concentrates

ULV concentrates may be thought of as special EC formulations. These normally contain a high concentration of active ingredient, often eight or more pounds per gallon. Most are designed to be mixed with water or oil. They contain chemicals that allow the formulation to wet, spread, and stick well to treated surfaces. Ultra low volume concentrates are designed to be used directly without further dilution and they may contain only the active ingredient.

Ready-To-Use Formulations (RTU)

These contain low amounts of active ingredient (often 1 % or less) and are usually solutions prepared in highly refined oils. They are generally designed to be used as purchased (ready-to-use) without any dilution. This type of formulation is most often used for controlling household pests, mothproofing, or as a livestock spray or a space spray in barns.

Flowables (F, L)

Flowables are made with active ingredients that do not dissolve well in water or oil. The finely ground active ingredients are mixed with a liquid, along with inert ingredients to form a suspension. Flowables are mixed with water for application and are similar to EC and wettables powder formulations in ease of handling and use. They are used in the same types of pest control operations for which ECs are used.

Advantages:

- Seldom clog nozzles.
- Easy to handle and apply.

Disadvantages:

- Requires moderate agitation.
- May leave a visible residue.

Aerosols (A)

These formulations are usually ready-to-use and packaged in a container that is under pressure. They usually contain a very low percentage of active ingredient, solvent and a propellant. The propellant is used to eject the active ingredient through a small opening as a fine spray. Convenience of use is its major advantage.

In addition to pressurized aerosols, there are thermal and mechanical aerosols that are used with specialized application equipment (smoke or fog generators) that break the liquid formulation into a fine mist or fog (aerosol).

Pressure Liquefied Gases and Fumigants

Some active ingredients are gases that kill when absorbed or inhaled. They are often stored under pressure in a liquid form. These formulations may be injected into the soil, released under tarps, or released into a grain storage elevator. Some liquid formulations that are not stored under pressure turn into gases or vapors after they have been applied to the soil or crop. If the formulation is an insecticide, the vapors of the active ingredient often kills the pest. If the formulation is a herbicide, the liquid has to be incorporated into the soil before it has a chance to turn into a gas; if not, the gas will be lost into the atmosphere. Phosphine, one of the most common fumigants for stored grain, is inserted as a solid (pellets or tablets) into the grain, where it vaporizes. Fumigants pose a serious safety risk because they are highly toxic and easily inhaled. They can also burn the skin.

Fumigants are pesticides that form poisonous gases during application. Some active ingredients are liquids when packaged under high pressure, but change to gases when they are released. Other active ingredients are volatile liquids when enclosed in an ordinary container and so are not formulated under pressure. Others are solids that release gases when applied under conditions of high humidity or in the presence of water vapor. Fumigants are used for structural pest control, in food and grain storage facilities, and in regulatory pest control at ports of entry and at State and national borders. In agricultural pest control, fumigants are used in soil and in greenhouses, granaries, and grain bins.

Different Dry Formulations:

Dusts (D)

Most dust formulations are ready-to-use and contain a low percentage of active ingredient (usually ½ to 10 percent), plus a very fine dry inert carrier made from talc, chalk, clay, nut hulls or volcanic ash. The size of individual dust particles varies. A few dust formulations are concentrates and contain a high percentage of active ingredient. These must be mixed with dry inert carriers before they can be applied. Dusts are always used dry and they easily drift to nontarget sites. They are sometimes used for agricultural applications. In structures, dust formulations are used in cracks and crevices and for spot treatments. They are widely used in seed treatment. Dusts are also used to control fleas, and other parasites on pets and livestock.

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Advantages:

- Usually ready-to-use without any mixing,
- Effective where moisture from a spray might cause damage,
- Require simple equipment,
- Effective in hard-to-reach indoor areas.

Disadvantages:

- Can easily drift off-target during application,
- Residues easily moved off target by air movement or water,
- May irritate, eyes, nose throat and skin,
- Does not stick to surfaces as well as liquids,
- Difficult to get an even distribution of particles on surfaces.

Granules (G)

Granule formulations are similar to dust formulations except that granular particles are larger and heavier. The coarse particles are made from an absorptive material such as clay, corn cobs, or walnuts shells. The active ingredient either coats the outside of the granules or is absorbed into them. The amount of active ingredient is relatively low, usually ranging from 1 to 15 percent. Granular pesticides are most often used to apply chemicals to soil to control weeds, nematodes, and insects living in the soil. Granular formulations are sometimes used in aerial applications to minimize drift or to penetrate dense vegetation. Granular formulations are also used to control larval mosquitoes and other aquatic pests. Granules are used in agricultural, structural, ornamental, turf, aquatic, right-of-way, and public health (biting insects) pest control operations.

Advantages:

- Ready-to-use; no mixing,
- Drift hazard is low and particles settle quickly,
- Little hazard to applicator; no spray and little dust,
- Weight carries the formulation through foliage to soil or water target sites,
- Simple application equipment, such as seeders or fertilizer spreaders,
- May break down more slowly than wettable powders and emulsifiable concentrates through a slow-release coating.

Disadvantages:

- Does not stick to foliage or other non-level surfaces,
- May need to be incorporated into soil or planting medium,
- May need moisture to start pesticidal action,
- May be hazardous to non-target species, especially waterfowl and other birds that mistakenly feed on the grain- or seed-like granules.

Wettable Powders (WP or W)

Wettable powders are dry, finely ground formulations that look like dusts. They are usually mixed with water and applied as a spray. A few products, however, may be applied either as a dust or as a wettable powder - the choice is left to the applicator. Wettable powders contain 5 to 95 percent active ingredient, usually 50 percent or more. Wettable powder particles do not dissolve in water. They settle out quickly unless constant agitation is used to keep them suspended. Wettable powders are one of the most widely used pesticide formulations. They can be used for most pest problems and in most types of spray equipment where agitation is possible.

Advantages:

- Easy to store, transport, and handle,
- Less likely than an emulsifiable concentrate (EC) and other petroleum-based pesticides to cause unwanted harm to treated plants, animals, and surfaces,
- Easy to measure and mix,
- Less skin and eye absorption than ECs and other liquid formulations

Disadvantages:

- Poses an inhalation hazard to applicator while pouring and mixing the concentrated powder,
- Requires good and constant agitation (usually mechanical) in the spray tank and quickly settles out if agitation is turned off,
- Abrasive to many pumps and nozzles causing them to wear out quickly,
- Difficult to mix in very hard or very alkaline water,
- Often clogs nozzles and screens,
- May leave a visible residue

Soluble Powders (SP or WSP)

Soluble powder formulations look like wettable powders. However, when mixed with water, soluble powders dissolve readily and form a true solution. After they are mixed thoroughly, no additional agitation is necessary. The amount of active ingredient in soluble powders ranges from 15 – 95%; usually over 50 percent. Soluble powders have all the advantages of wettable powders and none of the disadvantages except for the inhalation hazard during mixing. Few pesticides are available in this formulation, because few active ingredients are soluble in water.

Water-Dispersible Granules or Dry Flowables, (WDG or DF)

Water-dispersible granular formulations are like wettable powder formulations, except the active ingredient is prepared as granule-sized particles. Water-dispersible granules must be mixed with water to be applied. Once in water, the granules break apart into a fine powder. The formulation requires constant agitation to keep it suspended in water. Water-dispersible granules share the advantages of wettable powders except:

- They are more easily measured and mixed,
- They cause less inhalation hazard to the applicator during pouring and mixing.

Baits (B)

A bait formulation is an active ingredient mixed with food or another attractive substance. The bait either attracts the pest or is placed where the pest will find it. Pests are killed by eating the pesticide contained in the bait. The amount of active ingredient in most bait formulations is quite low, usually less than 5 percent. Baits are used inside buildings to control ants, roaches, flies, and other insects and for rodent control. In outdoor areas, they are sometimes used to control snails, slugs, and some insects, but their main use is for control of vertebrate pests such as rodents, other mammals and birds.

Advantages:

- Ready-to-use,
- Entire area need not be covered because pest goes to bait,
- Controls pests that move in and out of an area,

Disadvantages:

- Can be attractive to children and pets,
- May kill domestic animals and nontarget wildlife outdoors,
- Pest may prefer crop or other food to the bait,
- Dead pests may cause an odor problem,
- Other animals may be poisoned as a result of feeding on the poisoned pest,
- If baits are not removed when the pesticide becomes ineffective, they may serve as a food supply for the target pest or other pests.

Adjuvants

An adjuvant is a chemical added to a pesticide formulation or tank mix to increase its effectiveness or safety. Most pesticide formulations contain at least a small percentage of adjuvants. Some of the most common adjuvants are surfactants – “surface active ingredients” that alter the dispersing, spreading, and wetting properties of spray droplets. Common adjuvants are:

- Wetting agents - allows wettable powders to mix with water.
- Emulsifiers – allows petroleum-based pesticides (ECs) to mix with water.
- Invert emulsifiers – allows water-based pesticides to mix with petroleum carriers.
- Spreaders – allows pesticide to form a coating layer over the treated surface.
- Stickers – allows pesticide to stay on the treated surface.
- Penetrants – allows the pesticide to get through the outer surface to the inside of the treated area.
- Foaming agents – reduces drift.
- Thickeners – reduces drift by increasing droplet size.
- Safeners – reduces the toxicity of a pesticide formulation to the pesticide handler or to the treated surface.
- Compatibility agents – aids in the combining of pesticides effectively.
- Buffers – allows pesticides to be mixed with diluents or other pesticides of different acidity or alkalinity.
- Anti-foaming agent – reduces foaming of spray mixtures that require vigorous agitation.

Restricted Use Pesticide (RUP)

A pesticide or pesticide use classified for restricted use under FIFRA shall be considered as a restricted use pesticide in the State. In a few cases, pesticides or pesticide uses not considered as restricted use under FIFRA can be considered as restricted use under State rules. These products are identified by active ingredient under Hawaii Administrative Rules, Chapter 66, Section 4-66-32(e). It is important to be aware of this section since these container labels will not reflect a Restricted Use Pesticide statement on the front panel.

IMPORTANT Exceptions: Some nonrestricted use pesticide labels have restrictive statements on the front panel that limit distribution to certified applicators. For example:

“For Sale to and Use by Commercial Applicators Only”

Although these products may not be classified as restricted use pesticides “Commercial Applicator” is defined in the pesticides rules and is thus the statement is enforceable. The statement, “For Sale to and Use by Commercial Applicators Only” means the product can only be sold to and used by a commercial applicator as defined in the Administrative Rules, section 4-66-2. Since the product is not classified as an RUP, record of its sale is not required to be submitted to the Pesticides Branch.

Restricted Use Pesticide (RUP) Dealer and Representative

Any person who sells RUPs or pesticides requiring an annual use permit shall obtain a RUP dealer’s license for that purpose from the department which shall expire on December 31 of each year and shall be renewed on or before January 1 of each year.

Any manufacturer, registrant or distributor of a RUP who has no sales outlet licensed within this State and who sells or distributes such pesticides directly to the user shall obtain a Hawaii pesticide dealer license for its principal out-of-state location or outlet. An RUP dealer’s license is required for each sales outlet that sells or distributes RUPs in the State.

Application shall be on a form prescribed by the head and shall include name and address of applicant, location of the sales outlet, and name(s) of the licensed pesticide dealer representative(s) at each sales outlet. A fee of \$250.00 is assessed annually for each principal sales outlet and \$100.00 for each branch sales outlet.

All licensed sales outlets of RUPs shall have a licensed pesticide dealer representative. The name of the licensed pesticide dealer representative must be submitted together with the application for a license for the sales outlet. The head must be notified within 30 calendar days of any change of personnel in this position.

Persons seeking to be a licensed pesticide dealer representative must pass a written examination at a time and place designated by the head. The examination tests the applicant’s knowledge of pesticide laws and regulations, pesticide hazards, proper usage, safe storage and distribution and disposal methods. A license issued to a dealer representative is valid for five (5) years. Renewal is by examination only.

Pesticide Dealer Representative Study Material

Every licensed pesticide dealer is responsible for the acts of all licensed pesticide dealer representatives and individuals employed in the solicitation, sale and handling of pesticides. Any violation of the Act or this rule, whether committed by the dealer, licensed dealer representative or by any other officer, agent or employee of the dealer may result in suspension or revocation of the dealer's license or the license of the dealer representative, or both, as well as other penalties.

Sales of Restricted Use Pesticides

Sale or distribution of RUPs must be to certified applicators only who are certified in the appropriate category or another licensed RUP dealer. Pesticide products must be licensed at the time of sale or distribution.

To insure that sales of RUPs are made to certified applicators only, it is important to require applicators to present their certification card at the time of sale/purchase. Relying on file records may be convenient, but it's also an added liability to your company. If the applicator's card is revoked or re-issued under a different number or company name, and a sale made to the old card in your files, you will be subject to enforcement action.

Some RUPs may require additional permits prior to sale. Examples include products used under an emergency exemption and annual use permits. Purchase of products containing paraquat (i.e., Gramoxone Inteon[®]) also requires completion of an applicator acknowledgement form which is to be submitted to the department along with the monthly sales records.

Dealers' Records and Reports

Licensed dealers must keep a record of each sale, distribution, delivery, theft, spill or any other activity affecting the amount of RUPs and pesticides requiring an annual use permit. Records are to be maintained at the sales outlet on forms or on other media approved by the head.

In addition to dealer information, records must include the following:

- the name and address of the purchaser,
- a description of the activity (sale, distribution, spill, theft, etc.) affecting the amount of RUP,
- date of sale,
- brand name of product,
- EPA registration number,
- quantity sold,
- the applicator's certification number (or license no. if sold to another dealer),
- certification category,
- certification expiration date,
- intended use site (i.e., crop, site),
- pest to be controlled, and
- initials of the employee making the sale or record entry.

Sales records must be kept at the outlet of sale for a period of one year. A copy of the sales record must be submitted to the department within 15 days after the end of each calendar month for which the record is being kept.

Storage, Display and Sales of Pesticides

No pesticide shall be stored, displayed, placed for sale or transported where food and food containers, feed, water for human or animal consumption, or any other items are likely to become contaminated and may create a hazard or cause injury to humans, vegetation, crops, livestock, wildlife, beneficial insects and aquatic life.

Pesticides labeled for lawns, gardens and other outdoor uses shall be offered for sale only in garden supply centers or in other retail outlets that have a separate and distinct section for display of pesticides for outdoor use, as distinguished from pesticides formulated and registered for use inside the home.

A prominent sign with legible bold print not less than one-half inch in height to read “pesticide products for garden and lawn or outdoor use only – it is unlawful and may be hazardous to use inside your home” shall be posted in the area where such lawn and garden pesticides are displayed and sold.

Safety Guidance for Pesticide Dealers

The best source of information on the safe handling and use of pesticides is the label on the pesticide product container. Read the label and encourage your customers and employees to read the label. Pesticide products must be registered with the U.S. Environmental Protection Agency (EPA) before they can be manufactured and sold. Prior to receiving an EPA registration number, products must meet strict requirements for safety and effectiveness when used as directed.

All pesticides are poisonous to some degree and must be handled carefully. Pesticides bearing the skull and crossbones symbol are highly toxic and must be handled with special care. Products with a high percentage of active ingredient are called “concentrates”. Concentrates present more hazards than diluted materials, therefore, larger containers are generally packaged for use by farmers and commercial users who are knowledgeable about pesticides. They are normally not intended for use by the average homeowner.

Careless or improper handling, storage, display, disposal, or selling of pesticides can result in the accidental poisoning of a customer or employee. You may be held liable for damages or injury if you failed to take safety precautions in dealing with pesticides.

Receiving Shipments

When shipments of pesticides arrive, it is a good practice to check the vehicle and all pesticide containers before and after unloading. If a spill or leak is detected, notify the carrier and determine if other articles in the vehicle were contaminated. Make sure that labels are fully legible and are securely attached to the containers. Vehicles used to transport pesticides should be thoroughly cleaned before reuse.

If spillage or leakage involves a highly toxic pesticide that can be absorbed through breathing or directly through unbroken skin, clear the area and call 911 for your local fire department. If highly toxic chemicals are involved, manufacturers may supply trained decontamination teams.

Handling Pesticides

Handle all pesticide containers with care. Do not slide them over rough surfaces where bags may be torn or containers punctured by sharp protruding objects. If a forklift or other mechanical equipment is used, be careful not to accidentally damage containers.

Do not smoke or put your hands to your face when handling pesticides – even if containers are intact and tightly sealed. Wash your face and hands with soap and water immediately after handling pesticides.

Always wear protective equipment and protective clothing when handling open pesticide containers since that is the barrier between you and the pesticide.

Storing Pesticides

Store all pesticides in isolated areas away from articles intended for human and animal consumption and use (such as food, drugs, cosmetics, clothing, feeds, tobacco, or pet food), and away from living plants and animals. Herbicides should be kept separated from other pesticides to avoid cross-contamination and substitution errors.

Before storing any pesticide, read the label to see if any special precautions should be taken. Generally, pesticides should be stored in well-ventilated areas away from fire or heat sources such as furnaces and steam lines. Select a cool, dry place where bags and boxes will not deteriorate and spill their contents. Most liquids must be stored at temperatures above freezing. Avoid stacking pesticide packages too high since combined weight could break the packages on the bottom.

Displaying Pesticides

While stocking display shelves, it is a good idea to examine the pesticide containers. Be sure that containers are not leaking, that all caps are tight and that all packages are sealed. Labels should be in place and legible. Make sure that the outside surfaces of containers are not coated with pesticide. Damaged packages that look like they may spill their contents should not be placed out for sale.

Pesticides should be displayed on your store shelves separated from other products. This is important since containers for food and other items intended for human and animal use do not ordinarily provide protection from contamination by leakage or dust escaping from pesticide products. Above all, keep pesticides on shelves beyond the reach of children.

Serving Your Customers

Familiarize yourself with the products you sell. Labels list the crops, animals, or sites on which the product can be safely applied as well as the pests they control. Many container labeling or booklets are “non re-sealable”, therefore, you may need to refer to a specimen label from the manufacturer or one downloaded from the internet. Keep in mind that specimen labels may differ from the actual container labels. Therefore, it is important to remind customers to check the container label to verify that the site of application is listed.

Selling bigger packages may mean bigger profits, but it may also mean increased hazards when dealing with leftover pesticides. Try and sell customers only what they need for their immediate use. This will help minimize any subsequent problems of storing or disposing of leftover pesticides.

Repackaging Pesticides

Unless authorized by the EPA, do not repackage pesticides for sale. This is illegal and unsafe. Pesticide labels contain precautions and instructions needed by users, plus ingredient and antidote statements necessary in case of accidents. For these and other reasons, product labels must always remain with the pesticide container.

Disposing of Pesticides

All broken or damaged pesticide containers should be kept in a locked storage until time for disposal. If the labels are lost or obliterated, try to determine its contents and appropriate disposal methods.

There is no easy way to dispose of unwanted pesticides. See if your supplier will take back unsaleable products resulting from damage or leakage. Your supplier may be able to arrange for disposal with their factory wastes. If your supplier is unable to help you, you will need to dispose of them on your own through a disposal facility.

Taking Care of Accidents

If you spill a pesticide on your skin, wash with soap and water immediately. If your clothing is soaked or contaminated, remove clothing immediately and wash your body with soap and water. If allowed by the label, launder contaminated clothing before reuse. Clothing or shoes that cannot be thoroughly decontaminated must be discarded. Check label warnings and consult a physician if indicated.

Whenever a pesticide container is broken or leakage occurs, put on the required protective clothing before attempting to contain or clean up the spill. Low risk pesticide labels may have direction for cleaning up spills.

However, when dealing with agricultural, professional pest control or caustic type pesticides, call 911 for your local fire department. Do not attempt clean up unless you are properly equipped and have been trained in pesticide spill clean up. Depending upon the volatility and toxicity of the pesticide, you may need to evacuate all people from the affected area.

Handling of Hazardous Waste

The Superfund Amendments and Reauthorization Act or SARA became law in 1986 (PL 99-499). A major SARA provision is Title III, or SARA Title III, also referred to as Emergency Planning and Community Right-to-Know Act (EPCRA). EPCRA established guidelines for Federal, State and Local governments, and industry regarding emergency planning and providing communities with information on hazardous chemicals within their jurisdiction. The Hawaii Emergency Planning and Community Right-to-Know Act became law in 1993 (HRS 128E), and promulgated SARA Title III in the State of Hawaii.

A **State Emergency Response Commission (SERC)** was formed in Hawaii and each of the four counties was designated as an emergency planning district. A **Local Emergency Planning Committee (LEPC)** was then established in each county. Functions of the LEPC include preparing a hazardous material emergency response plan, reviewing the plan annually, evaluating resources to mitigate an emergency, receiving Tier II reports and notifications of spills and releases, and receiving and processing requests for information from the general public.

Sale of Restricted Use Pesticides to Unlicensed Pest Control Companies

During the 2007 legislative session, Act 71 was passed, which **prohibits the sale of restricted use pesticides to Pest Control Operators (structural) unless that person holds or is employed by a company with a valid pest control (business) license.**

Hawaii Pesticides Law, Chapter 149A section 149A-11(b)(7) states that it shall be unlawful for any pesticide dealer to expose to, offer for sale to, or solicit or receive orders for the sale of restricted use pesticides to any pest control operator or to an employee of the pest control operator acting on the pest control operator's behalf without satisfactory proof that the pest control operator holds, or has held within the previous one hundred twenty days, a pest control license and, when applicable, without satisfactory proof that the employee is employed by the pest control operator.

RUP dealers must also be aware of purchases that do not follow the normal purchasing patterns of the pest control company. This includes purchases with cash, personal check or personal credit card. In these cases, in addition to verification of the company license, it would be prudent to verify that the person is still employed by the company identified on the certification card.

Additional information can be found on the Pesticide Branch website.