OREGON DEPARTMENT OF AGRICULTURE

AGRICULTURE: HERBICIDE

EXAMINATION OUTLINE

To successfully complete this examination, the applicant will need to be familiar with the topics identified in this outline. The outline is not intended to be used as the sole study material and may not be all inclusive of topics covered in the exam. See "Pesticide Licensing Guide for Oregon" (available online or by calling 503-986-4635) for details on recommended study material.

It is advisable to bring a small, hand held calculator to the exam session to assist in performing calculations. This exam has 100 questions. A score of 70% is needed to pass the exam.
Government issued photo identification (such as a driver's license) will be required when you check in for testing.

OREGON DEPARTMENT OF AGRICULTURE
PESTICIDE EXAMINATION OUTLINE
AGRICULTURE HERBICIDE

1) Weeds
    a) Biology
        i) Lifecycles
(1) Annual
(2) Biennial
(3) Perennial
        ii) Taxonomy
(1) Broadleafs
(2) Grasses
(3) Sedges
    b) Identification
        i) Photo identification of the following weeds:
(1) Field bindweed Convolvulus arevensis
(2) Canada thistle Cirsium arvense
(3) Field horsetail Equisetum arvense
(4) Green foxtail Setaria veridis
(5) Barnyardgrass Echinochloa crus-galli
(6) Downy brome Bromus tectorum
(7) Wild oat Avena fatua
(8) Quackgrass Agropyron repens
(9) Yellow nutsedge Cyperus esculentus
(10) Lambsquarters Chenopodium album
(11) Pigweed Amaranthus sp.
(12) Hoary cress (whitetop) Cardaria draba
(13) Wild carrot Daucus carota
(14) Hairy nightshade Solanum sarrachoides
(15) Jointed goatgrass Aegilop cylindrical
(16) Russian knapweed Centaurea repens
(17) Mayweed chamomile Anthemis cotula
(18) Coast fiddleneck Amisinckia intermedia
(19) Russian thistle Salsola sp.
(20) Bull thistle Cirsium vulgare
2) Adjuvants
    a) Surfactants
        i) Anionic
        ii) Cationic
        iii) Non-ionic
    b) Oils
    c) Drift retardants
3) Herbicide families and formulations
    a) Herbicide formulations
        i) Liquid
(1) Soluble concentrates
(2) Emulsifiable concentrates
(3) Wettable powders
(4) Flowables

(5) Dispersible granules or dry flowables
(6) Invert emulsions
(7) Microencapsulated formulations

ii) Dry

(1) Granules
(2) Pellets
(3) Dusts

iii) Active ingredient vs acid equivalent
iv) Tank mixing

(1) Proper order for mixing

b) Herbicide families (for each herbicide family, understand the mode of action and be able to associate trade names/active ingredients with the herbicide family. Note: making a chart might be helpful.

i) Growth regulators
ii) Bipyridyliums
iii) Fatty acid synthesis inhibitor grass killers
iv) Substituted glycine
v) Triazines
vi) Ureas
vii) Uracils
viii) Thiocarbamates
ix) Dinitrobenzeneamines or dinitroanilines
x) Sulfonylureas

4) Factors influencing soil-applied herbicides
a) Microbiological effects
b) Adsorption to soil
c) Chemical decomposition
d) Leaching
e) Photodegradation
5) Application equipment
a) Parts of a sprayer
b) Types of spray pumps
c) Band and directed spraying
d) Operating precautions
e) Cleaning and storing spray equipment
6) Calibration/calculations
a) Know how to calculate the following based on word problems that provide relevant variables.

i) Application rate
ii) Sprayer delivery rate
iii) Area of a field
iv) How much concentrate to dilute into spray tank
v) Miscellaneous problems and combinations of the above.

b) Best ways to change sprayer output, application rates, etc.
7) Label interpretation
a) The label is the law
b) Parts of the label
c) Be able to answer word problems based on the text in a sample label.
8) Avoiding chemical trespass
a) Vapor drift

b) Particle drift
c) Ways to reduce drift

9) Management aspects of herbicide use
a) Timing and rates
b) Integrated Pest Management (IPM)
c) Herbicide resistance
d) Herbicide-resistant crops