

PESTICIDE LAWS



Table I. PESTICIDE USE LAW CHART
LAWS and REGULATIONS RELATING to the USE of PESTICIDES GENERALLY
December 1969

	Products Covered					Users Covered		Licenses or Permits Required		
	INSECTICIDES	FUNGICIDES	HERBICIDES	RODENTICIDES	OTHERS	AERIAL APPLICATORS*	GROUND APPLICATORS	AERIAL APPLICATORS	GROUND APPLICATORS	OTHERS
Alabama	X	X		X	3	Cu	Cu	Cu	Cu	
Arizona	X	X	X	X	1	All	Cu	All	Cu	10
Arkansas	X	X	X	X		Cu	Cu	Cu	Cu	
California	X	X	X	X		All	All	All	All	5
Colorado	X	X	X		1,6	Cu	Cu	Cu	Cu	
Connecticut	X	X	X	X	2,3	All	Cu	All	Cu	7
Florida	X	X	X	X			Cu		Cu	
Hawaii			X			All	All	All	All	4,5
Idaho	X	X	X		1	Cu	Cu	Cu	Cu	
Illinois	X	X	X			Cu	Cu	Cu	Cu	8
Indiana	X	X	X	X	2	All		All		
Iowa	X	X	X	X		Cu	Cu	Cu	Cu	
Kansas	X	X	X	X		All	Cu	All	Cu	
Kentucky	X	X	X	X			Cu		Cu	
Louisiana	X	X	X	X	1	Cu	Cu	Cu	Cu	8
Maine	X	X	X	X		All	Cu	All	Cu	
Maryland	X	X	X	X		All	Cu	All	Cu	
Massachusetts	X	X	X	X	9	All	All	All		9
Michigan	X	X	X	X		Cu	Cu	Cu	Cu	
Minnesota	X	X	X	X		All	Cu	All	Cu	
Mississippi	X	X	X	X	3	All	Cu	All	Cu	
Nevada	X	X	X	X	2	Cu	Cu	Cu	Cu	2
New Hampshire	X	X				Cu	Cu	Cu	Cu	
New Mexico	X	X	X	X	1	Cu	Cu	Cu	Cu	
New York			X		8,9					8,9
North Carolina	X	X	X	X		All		All		
North Dakota	X	X	X	X	2	All		All		
Ohio			X			8	8	8	8	8
Oklahoma	X	X	X	X	1	Cu	Cu	Cu	Cu	8
Oregon	X		X			All	All	All	All	5
Rhode Island	X	X	X	X		Cu	Cu	Cu	Cu	
South Dakota	X	X	X	X		All	Cu	All	Cu	
Tennessee	X	X		X		Cu	Cu	Cu	Cu	
Texas			X			All	All	All	All	4,5
Utah	X	X	X			All	Cu	All	Cu	
Vermont	X	X	X	X		All		All		
Washington	X	X	X	X	1,6	All	All	Cu	Cu	
Wisconsin	X					9	9	9	9	9
Puerto Rico			X			8	8	8	8	8

All—All users (those treating their own land and custom applicators)

Cu—Custom applicators only

1—Plant growth regulators and defoliants

2—Fertilizers and/or seeds

3—Sprays or methods used to improve the condition of trees

4—Manufacturers and dealers

5—Owner of land to be treated

6—Nematocides

7—Tree experts

8—Special statute relating to herbicides

9—Pertinent only to application of chemicals to water and to non-crop areas. See Statute

10—Growers and sellers

* The federal government exercises some control over use of pesticides by requiring agricultural aircraft operators to obtain certificates when engaged in spraying economic poisons. Certification is awarded by the FAA only when certain standards are met by the pilot. No pilot may, under these regulations, dispense an economic poison that is registered under FIRA (1) for a use other than that for which it is registered, (2) contrary to any safety instructions or use limitations on its label or (3) in violation of any federal law or regulation. These rules do not exempt the aerial applicator from more stringent state laws which may be in effect.

As They Stand; What Changes Could Mean . . .

PESTICIDE-USE LAWS and regulations, in simply numbers, are practically unchanged from two years ago. A steady stream of amendments, however, is hitting state legislatures, calling for more joint-agency evaluations, more restrictive usage and application, and in some cases outright and across-the-board bans of a wide variety of pesticides and herbicides.

The startling aspect of the amendment onslaught is that sponsors and proponents seem to ignore, or choose to defy, the overwhelming evidence available that much of the legislation is unnecessary and some of it, according to an increasing number of scientists, could bring downright dangerous consequences.

A study of pesticide use and the impact of eliminating pesticides has just been published by the University of Nebraska. Authors are agronomist Orvin C. Burnside, Extension pesticide specialist John D. Furrer, and entomologist Robert E. Roselle.

If you ignore the probability or possibility of certain conditions developing, it's rather simple to come up with alarming projections, they suggest. Publicity to date, they charge, has been centered on the projections of the "anti-pesticide voices." The Nebraska study discounts the projections of attackers of pesticides and considers possible consequences of eliminating pesticide use altogether.

Among consequences:

Crop yields would drop from 20% to 30% and food prices would rise from 50% to 75%. Production of some crops would cease. Agricultural exports would end and a migration of labor back to the farm would have to occur to produce enough food.

Millions of lives would be lost again because of disease in duplications in many parts of the world of what actually happened in Ceylon. The introduction of a DDT mosquito eradication program reduced that

country's malaria cases from two million in 1950 to 17 in 1963. DDT use was then stopped, but by 1968 the malaria cases had again reached one million. The program was reinstated last year.

Benefit-Risk Equation

Of course, the elimination of pesticide use entirely is remote, the report concedes. But information of this nature needs to be known by the general public to keep the value of pesticides in perspective.

What is needed, states the report, is public awareness of the "benefit-risk equation" as it relates to pesticides—an equation that has been applied to every other invention from the creative genius of man.

"Modern drugs save millions of lives, but some people have died because of them; the automobile kills and maims, but it has changed our lives generally for the better," state the Nebraskans.

"Chemical pesticides kill pests because they are toxic, and because they are toxic some are also capable, in excessive dosages, of causing illness, even death, in people and wildlife.

Perhaps the most prevalent misunderstanding, about pesticides, the report continued, is that "some people believe that if a chemical is toxic at high level it is toxic at all levels."

The ridiculousness of this assumption is exposed in the established fact that aspirin and even common table salt is more toxic than a number of the more common insecticides, herbicides and fungicides. (Table 2).

Furthermore, the deaths attributed to aspirin far exceed the deaths caused by all pesticides combined.

People fought the addition of flouride to drinking water, the report reminded, because of the publicized fact that flouride is toxic at high levels and despite the fact it is beneficial in reducing tooth decay at low levels. People brought about the ban of cyclamates because high dosages induced cancer in rats.

However, the report stated, "a human being would have to drink some 300 to 600 bottles of cyclamated beverage, depending on brand, at one time in order to equate the consumption by the rats."

Myths About DDT

The Nebraskans took special offense at the exaggerated and unfounded attacks upon DDT that, for all practical purposes, has eliminated its use. As examples:

1. *That DDT and other pesticides have caused fish kills.* Table 3 sets

the record straight, showing that all insecticides, poisons, etc., have accounted for only 3%.

2. *That as many as 100 species of animals and birds are threatened with extinction because of pesticides.* Dr. D. A. Spencer, consulting ecologist of the National Agricultural Chemicals Association was quoted as noting that an estimated 99% of all species of life that have existed at one time or another are now extinct. The study charges that the critics perhaps have occasionally taken the easy way out by blaming DDT rather than studying the entire environment.

3. *That DDT is building up all over the world.* Francis Coon, chief of the Wisconsin Alumni Research Foundation's chemical department is quoted concerning the identification confusion with polychlorinated biphenyls. PCB produces almost an identical picture to DDT when analyzed on a gas-chromatograph, he stated. Most gas chromatographic assays, therefore, have overstated the amount of DDT in samples.

4. *That DDT is reducing bird populations.* Audubon Society bird counts for 1941 and 1960, before and after widespread use of DDT, show 131, 39, 21, 11 and 12 fold increases in grackles, blackbirds, cowbirds, starlings and robins, respectively.

In 9,000 Years, Still Impossible

Perhaps the most exaggerated and unfounded claim is the widely publicized report that DDT would destroy the ocean's food supply because it affects the photosynthesis process in the phytoplankton. Concerning this preposterous fable, the report states:

"Presumably these predictions of doom for the human race are based on an article published by C. Wurstler, in *SCIENCE* in March, 1968, (and *WEEDS TREES* and *TURF*, August, 1969), where five species of marine algae were studied. To the water in which each of these algae was grown was added 500 parts per billion of DDT in ethanol although the solubility of DDT in water is only 1.2 parts per billion.

"That means the algae were exposed to DDT concentrations up to 400 times as great as would be present in an ocean saturated with DDT. At the 1.2 parts per billion DDT concentration, the algae photosynthesis was not affected, and it was only at the DDT levels far above its solubility in water that photosynthesis was depressed. This is an example of drawing conclusions from a laboratory experiment that has no relation to the natural environment.

"Calculations were made on how

long it would take to saturate the oceans with DDT, making three assumptions: (1) 300 million pounds of world DDT production per year; (2) no DDT breakdown would occur; and (3) all DDT produced was purposely added to the oceans. Even then it would take more than 9,000 years to reach 1 part per billion DDT in the oceans.

"At any conceivable DDT breakdown rate and at any reasonable rate of DDT production, saturation

of the oceans to 1 part per billion would be impossible."

Legislation Pending

Still the pesticide legislation floods the state houses. To name a few, bills are pending in New York (AB117), Virginia (SB56), Massachusetts (SB958 and HB345), Rhode Island (HB1014) and Oklahoma (HB 1587), reports the Chemical Specialties Manufacturers Association.

The bills call for bans on use or

sale of from one to eight chlorinated hydrocarbons. Punishment is called for to the extreme of \$10,000 and/or five years' imprisonment (Virginia) for each offense. This punishment covers other types of contamination also.

California Bans 35

Some state officials react to the outcry against pesticides philosophically, discounting any unbearable consequences.

The State of California has banned 35 chemical pesticides from use in weed and insect control along the 15,000-mile state highway system, forcing the use of environmentally safer, though perhaps more expensive, materials.

State Public Works Director James A. Moe said the order was in keeping with the state's increasing concern over protection of the environment from permanent contamination by persistent chemicals.

Moe said less persistent chemicals will be used on the highways in the future. The state maintains some 7,000 acres of landscaping and 3,000 acres of functional roadside planting, and most chemical applications are handled by the Division of Highways.

"We're the biggest farmer in the state," explained W. H. Armstrong, one of the two landscape specialists in the Division of Highways headquarters office in Sacramento. "But I don't think we'll suffer a bit. We may have to use something which will be a little less effective, or we may have to apply it a little more frequently, or something of this sort."

Armstrong said state weed and insect control is both a matter of protecting adjacent farm and rangelands and for highway appearance and landscaping maintenance. The biggest use of weed control chemicals is to create fire guard strips in forest and rangelands, he explained.

"There will be no let down in any of these programs," Armstrong promised.

The list of banned chemicals was taken from one developed by the State Department of Agriculture. By common name, the pesticides are DDT, DDD, TDE, Paris Green, TEPP, Parathion, Methyl Parathion, EPN, OMPA, Demeton, Phosdrin, Thimet, Di-Syston, Bidrin, 2,4,5-T, MCP, 2,4-DP, Silvex, 2,4-DB, Temik, Starlacide, Avitrol 100, Avitrol 200, Azodrin, Propanil, Chloropicrin, Dieldrin, Endrin, Toxaphene, Heptachlor, Kelthane, Ovex and Thiodan.

"The state has an excellent safety record with chemical products,"

Table 2. Pesticide toxicity in the U. S.

Type of pesticide	Most widely used chemicals in 1969	Acute oral LD ₅₀ -values for rats mg/kg	Human deaths in 1961*
Insecticides	Parathion	4	18**
	Toxaphene	80	2
	Carybaryl	500	0
	DDT	118	0
	Endrin	7	1
Herbicides	2,4-D Ester	700	1
	Atrazine	3080	0
	Trifluralin	5400	0
	Propanil	2270	0
	Amiben	3500	0
Fungicides	Sulfur	—	0
	Copper sulfate	300	0
	Captan	15000	0
	Zineb	5200	0
	Maneb	7500	0
Other	Aspirin	365	182
	Salt	3750	—
	Picloram	8200	0
	Amitrole	15000	0
	Lead arsenite	10	29
	Strychnine	1	1

*Hayes, W. J. 1964. Occurrence of poisoning by pesticides. Archives of Environmental Health 9:621-625.

**There were 4 deaths from parathion in 1952. Parathion use has increased more than 100% from 1961 to 1967.

Table 3. Pollution causing fish kill in the U. S. in 1967*

Source of pollution	Reported fish killed	% of total
Industrial wastes	8,087,091	72.7
Municipal wastes	643,304	5.8
Transportation wastes	143,123	1.3
Other operations	638,266	5.7
Insecticides, poisons, etc.	329,130	3.0
Fertilizers	10,000	0.1
Manure-silage drainage	1,268,137	11.4
TOTAL	11,119,051	100

*Pollution caused fish kills—1967. Federal Water Pollution Control Admin., Washington, D. C. 8: 1-16.

Armstrong said. "But if there's a way we can make our operation a little safer by spending a little more money, why, this may be what we have to do."

Florida Restricts 35

At the other end of the country, in Florida, a more sensible approach has been taken regarding pesticide use. Rather than establishing outright bans, the legislation restricts usage to those who must prove there is a need and that they know how to apply the chemical properly.

The new Florida law restricts the sale, purchase, use and possession of 35 specific pesticides.

The primary purpose of the law is to limit the use of highly toxic pesticides to commercial agriculture. It also limits the use of certain materials, including DDT, Aldrin, Endrin, Dieldrin, and Heptachlor, according to James E. Brogdon, entomologist, Florida Agricultural Extension Service.

Dealers now must have a license to sell the pesticides, and purchasers must have a permit to buy them, Brogdon points out.

Permits are available to bona fide agricultural users who must be certified as such by county agricultural Extension directors.

Pesticides restricted in all concentrations are: Aldicarb (Temik); Azodrin, Bidrin, Carbofuran (Furadan) (Except granular 10% and below), liquid hydrogen cyanide; DDD (TDE), DDT, Demeton (Systox), Endrin, EPN (O-Ethyl-P-p-nitrophenyl phenylsophosphoanathioate) O-ethyl S-phenyl ethylsophosphodiathioate (Dyfonate), Fensulfothion (Dasanit) methyl bromide, methyl parathion, Mevinphos (Phosdrin), Parathion, Phorate (Thimet), Phosphamidon, Phosphorus (white or yellow), Prophos (Mocap), selenites and selenates, sodium fluoroacetate (1080), strychnine and its salts, TEPP (tetraethyl phosphophate), thallium compounds and Zinophos.

Restrictions on pesticides above certain concentrations include: Aldrin (above 10%); inorganic cyanides (5% and above) (except liquid hydrogen cyanide, which is restricted in all concentrations); Dieldrin (above 10%), Disulfoton (Di-syston) (above 2%), Guthion (above 1.1 pounds per gallon), Heptachlor (above 10%), Nicotine and its salts (above 5%), Paraquat (above 0.2% cation), Toxaphene (above 10%).

Arsenic compounds: inorganic insoluble (50% and above as the compound) including calcium arsenate, lead arsenate, magnesium arsenate, paris green. Inorganic soluble: in-

cluding arsenic trioxide (1½% and above), sodium arsenite, (2% and above), and sodium arsenate, (5% and above).

The user of the above pesticides must state on his application what he intends to use them for.

Permit to purchase and use "restricted pesticides" may be issued for any uses recommended for the pesticide in the labeling of that pesticide, which is registered with the Florida Department of Agriculture and Consumer Services or the United States Department of Agriculture, with these limitations:

Aldrin will be permitted only for use on pine seedlings; as seed treatments; as soil treatment for fruit trees; vegetables, turf; as soil treatment for foliage, flower, fern, and woody ornamentals; and by licensed pest control operators in accordance with federal registration.

Arsenic Trioxide (above 1½%) and Sodium Arsenite (above 2%) will be permitted only for termite control).

DDD (TDE) will be permitted only for use on cotton, corn, peanuts, soybeans, tomatoes, tobacco, chrysanthemums, gladiolus, and as soil treatment for vegetables.

DDT will be permitted only for use on cabbage, corn, cotton, peanuts, soybeans, sweet potatoes, public health use, and by licensed pest control operators in accordance with federal registration.

Dieldrin will be permitted only for use on peaches, and sweet potatoes; as seed treatments; as soil treatment for fruit trees, turf; as soil treatment for flower, foliage, fern, and woody ornamentals; and by licensed pest control operators in accordance with federal registration.

Endrin will be permitted only for use on cotton, sugar cane, cucurbit seed, and pine seed.

Heptachlor will be permitted only as soil treatment for fruit trees, turf; as soil treatment for flower, foliage, fern, and woody ornamentals; and by licensed pest control operators in accordance with federal registration.

Phosphorus (white or yellow) will be permitted for use as a rodenticide by licensed pest control operators and governmental agencies only, for use in commercial and industrial establishments.

Sodium fluoroacetate (1080) will be permitted for use as a rodenticide by licensed pest control operators and governmental agencies only.

Thallium sulfate will be permitted for use as a rodenticide and for control of insects by governmental agencies only.

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