CHEMICALS IN AGRICULTURE AND FOOD

John V. Osmun
Purdue University

Years ago my agricultural economist friends at Purdue taught me that if people have pertinent facts and understanding, they will reach sound judgments on public issues. I have tried to believe this over the past decade as it applies to chemicals used in agriculture, in food protection, and in public health.

Today, the use of chemicals, especially pesticides, in agriculture is only partway down the sequential road to resolution. The situation is characterized by hazy public understanding, unrealistic administrative policy, and a certain unwillingness to accept and adjust to emerging facts. There has been much controversy, some emerging thoughtful debate, and a few reasonable solutions to some of our problems.

The confounding situation is one of heterogeneous mixtures of influences: an irate congress, an unreal administering agency, strong-willed environmentalists, pseudo-health experts, opportunist lawyers, industry proponents, beneficiaries of good chemical use, and a constant and conflicting flow of information and opinions on the subject of chemicals in our society. This is the arena which extension must enter if it is to pursue public policy education in the area of chemical use.

To understand more clearly the situation today, let us look briefly at history. During World War II, the public began to hear reports of the "greatest chemical discovery of all time", DDT. When that chemical became available, people literally lined the streets to obtain it. Its effectiveness and low cost led to dramatic increases in crop production, relative freedom from pest-borne disease, and even the temporary disappearance of the obnoxious housefly! It ushered in an era of extensive use of all types of chemical pesticides.

Unfortunately, many of the uses were unbridled, and as a result, pesticides were applied excessively in terms of need and extent of application. Laymen and scientists alike were guilty of not recognizing the early warning signals. These suggested that use of persistent pesticides should be constrained to prevent their untoward effects on wildlife and mankind.

Controversy of the most vociferous nature soon prevailed, nearly to the point of our losing the uses of many chemicals. Fortunately, through the orderly process in congress, levelheads prevailed. From this came the passage of the 1972 amendment to the Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA).

This essentially new act and the transferral of administration from the U. S. Department of Agriculture to the Environmental Protection Agency reflected certain inadequacies in laws to that time. There also was some dissatisfaction with the lack of enforcement of their provisions.

Since the original FIFRA was restricted in its authority to regulating quality of products in terms of efficacy and safety, it was considered to be inadequate in terms of the problems of the day. In particular, there was concern about the environmental consequences of use, the subtle effects on human health, the control of users, and the thousands of pesticides which were being marketed via state regulations.

Amended, FIFRA does not sharply define its purposes. These purposes become evident, however, when one examines both the sections of the law and the history of congressional intent. Primarily it is designed to protect health and environment, taking into account the public interest. A number of avenues are open to achieve these objectives:

—To be marketed, all pesticides whether intended for inter- or intrastate commerce, must be registered with EPA. The accompanying label is a legal document which details the safe and effective use of the product.

—Uses of pesticides are classified for general or restricted use. This action minimizes human exposure while helping to assure limited, accurate applications where and when authorized. The restricted use provision provides additional control of certain pesticides which will permit their beneficial uses and prevent or minimize their misuse.

—The law regulates the application of pesticides. Two types of applicators certified to use restricted use pesticides are identified: private and commercial. The private applicator category is limited to farmers and others producing agricultural commodities; all other applicators are considered "commercial". This system of linking permission to use certain materials to demonstrated competency of an applicator is, if permitted to function correctly, one of the great strengths of the law. Judgment

and precision application can do more to control usage and thus reduce hazard to man and the environment than any other single measure short of complete unavailability of pesticides.

—The law recognizes the importance of coordinated federal-state administrative actions; for example, the management of the certification system is left to the states once state plans are approved. This delegation of authority permits accurate identification of problem areas, ease of administration, and immediate response within the framework of a state system.

—The processes of cancellation and suspension are facilitated in case of unreasonable adverse effects (not mitigated by restricted use) and imminent hazards.

—The enforcement authority is extensive and ranges from product quality, misbranding, improper use of applicators, to disposal. Enforcement may be accomplished by warnings, court injunctions, seizure, civil penalties, and criminal charges.

—The availability and application of pesticides for experimental use is strictly controlled by a permit system. (Depending on the final resolution of regulations on this section, this provision may complicate previously unrestricted research. It is not clear to what extent experiment stations, ARS and others may be impeded).

—The law identifies both the need for training of applicators and the availability of the State Cooperative Extension Service as a delivery system to inform persons of accepted uses and other regulations. Thus it provides for education in a regulatory system while maintaining the integrity of the education process. This should facilitate public policy education.

In summary, FIFRA, as amended, has provided expected provisions and some imaginative new ones, and it is packaged in a reasonably workable form. Its overall purpose is to provide a mechanism for acceptable marketing of pesticide chemicals while protecting the health and environment.

Among the confusing aspects of rule making are levels of government. Frequently administrating agencies bear the brunt of public criticism on certain issues which more accurately should be directed at the law itself i.e., congress. FIFRA, as amended, for example, had its origin in the executive branch which requested its consideration by congress. Congress, in turn, thoroughly massaged

it to the point of achieving its identity. The statutes were given to the EPA to administer.

The regulations and policies are the agency's interpretation of the law as it sees a functioning system. The success of a law, after all, is only as good as its administration. The intent of congress, as found in congressional history, must be frequently reviewed lest the letter of the law be warped through interpretation.

The EPA was not entirely pleased with the law as passed, and as a consequence tended, during its early years, to administer certain sections of the law somewhat arbitrarily and with little appreciation of the real world. This posture led to the intense congressional oversight hearings of 1975 and the resulting amendments of that year.

EPA is a major factor in shaping philosophy. The latter is difficult to characterize, however, because EPA is multi-structured in terms of internal organization which influences attitude. In administering FIFRA, EPA has assumed a posture of strict interpretation of those facets of the law which fit its modus operandi.

The Office of Pesticide Programs, with its responsibility to register and promote the concept of competent applicators, has the best balance between supporting pesticide use while expressing strong environmental and health concerns.

The Office of the General Counsel has operated in a strict constructionist sense, thus influencing tight regulations and advocating cancellation where possible. Its adversary role in matters relating to cancellation of pesticides has bordered on the notorious.

The enforcement program is strongly oriented to a philosophy that early prosecution is preferable to warnings even in cases involving minor violations. Thus, when viewed collectively, EPA's philosophy is a long way from the laissez-faire approach found in some other countries such as Australia.

There are additional factors influencing philosophy, or at least its tone. These include:

—Public opinion that seems to vacillate (fertile ground for public policy education).

—Precedent-setting events such as Mr. Ruckelshaus' decision to cancel uses of DDT; this was a value judgment made contrary to scientific evidence and advice. His decision reflected the public concern of the time.

—The effects of the Delaney Amendment to the Food and Drug Act, relating to food additives. It declared that no additive shall be deemed safe if it is found to induce cancer in man or animal when determined by suitable laboratory tests. Today so many chemicals can be shown in certain very sensitive test animals to cause abnormal growth that few pesticides are probably lily white and pure. The specter of cancer is a very strong factor in urging cancellation of chemical uses and a new strong deterrent to development and marketing of new materials.

The public seems in possession of a mixture of facts, what appear to be facts, and out-and-out misconceptions. We are faced with bringing order to a situation beset with conflict. Stated in a positive vein, it is a search for balance. Congress attempted to achieve balance in structuring the law. It behooves administration and judicial alike to look objectively at scientific evidence and use-experience and then to assess both risk (cost) and benefits in terms of each use of a chemical.

The puzzle until recently has been EPA's emphasis on risk to the near exclusion of benefits. True, benefit should be most strongly defended by those who are advocates of a use. However, EPA committed itself during hearings in defense of FIFRA to weigh risk against benefit, taking into account the public interest.

The law is clear that determination of unreasonable adverse effect must at the same time take into account economic, social, and environmental costs and benefits of the use of any pesticides. Assessment of risks and benefits are required at virtually every decision point and whenever new evidence is available suggesting a change in the relative balance of risk and benefit.

At the same time the agricultural community and other users of pesticides must organize now to assemble and, where necessary, generate data in support of use; these to be properly assessed before being transmitted to EPA. The law deals with uses of pesticides and thus benefit-risk studies and determinations must be on a use-by-use basis. Only in this manner can we, as the law intended, continue to have the tolerable availability of certain pesticides which on the surface appear to be troublesome.

One of the problems in the past, at least, has been the lack of adequate outside input into EPA's decision making process. This is especially true as related to the development of regulations. It is inadequate simply to publish a proposed action in the Federal

Register as a means for soliciting comments. Many public hearings are equally non-productive.

Affected parties and experts need to be brought into the development of regulations early in the process in a series of roundtable discussions. Further, they should be given a chance to react again when the proposed regulations are in the draft stage.

It is significant, therefore, that the 1975 amendments included two major provisions which impact on EPA rulemaking, namely the required review and response of USDA and the input of the newly created scientific advisory panel. Both have an opportunity to take issue with proposed as well as final regulations. The process must be streamlined, however, or it will take a year or more to develop and produce a regulation.

These developments mean that the administrative rulemaking process, principally a function of EPA, has become increasingly complicated. Since part of this problem is of administration's own making, there appears to be an opportunity to influence administration policy through education which will motivate the public to effective choices of action.

At this point, it would be well to describe an existing situation (program) involving farmers that is national in scope, but decentralized to the state level for implementation. It is regulatory in origin, but educational in terms of programming. The parameters of its standards have been established by both congress and the EPA, yet the organization and detailed content have been left to extension to develop and present.

This is the training program designed to prepare farmers for certification so that agriculture may have the opportunity to use restricted use pesticides. Most farm operations which are significantly dependent on chemical protectants will have people involved.

To my knowledge, this is the first time a farmer has been legally required to become certified in order to continue a farming practice that has been a routine part of his operations for many years. The choices are clear, however:

1. A farmer can become certified and have ready accessibility to chemicals which will not be available to the general public.

2. He can refuse to become certified and try to produce agricultural commodities without the best chemicals available to him.

3. He can contract his plant and animal protection to a commercial, certified applicator.

4. He can attempt to generate pressure which might persuade a state either to defy the law or else influence congress to amend it.

Most states are proceeding normally. Where they are, the extension services are viewing the requirement as a special opportunity to aid the farmer while simultaneously reaching a more inclusive farm audience than has been the case in recent years. Permit me to describe the Indiana program to illustrate a typical approach to the situation: The extension training is conducted at the county level. Extension agents are holding half-day sessions for farmers and will continue to do so until the demand is satisfied. The training must be completed prior to October, 1977. After that, farmers will occasionally need to attend continuing education meetings to maintain their certification status.

In preparation for this responsibility, county extension agents attended a very intensive one-week training workshop and were then required to pass a rigorous certification examination. They have been provided with extensive supporting material. At the close of a training session, each person completes a "certification worksheet" which is mailed in to the regulatory lead agency, which issues the certification permit.

Perhaps it would be constructive to list a series of action steps that extension can take which relate to public policy education. These are not necessarily in order of priority.

1. Develop a continuing agricultural chemical education program for the general public. Scientific assistance must be sought in anticipating what chemicals take precedence.

2. Rebut poor journalism which leaves the public with half truths and misconceptions.

3. Carefully prepare a positively oriented information program for farmers that explains clearly the need for certification training. Recent farm magazine polls indicate a high percentage who still do not intend to engage in this needed activity. I believe this is more a result of prevailing ignorance or misconception than out-and-out rebellion against the new system.

4. Utilize certification training sessions to objectively inform the using public of administrative and judicial decisions affecting the use of chemicals.

5. Bring together opinion makers for forums on chemical use. Representatives of agricultural organizations, commodity groups, environmental leagues, chemical associations, as well as knowledgeable legislators, specialists in the field, and vo-ag and other

teachers should be represented. Such groups should report their conclusions to administration at both state and federal levels. Forums of this sort must anticipate and be held prior to the time a decision is made.

6. Staff and organize extension so that chemical use as a program, is clearly and significantly identifiable as is, for example, cattle production, field crop production, or even 4-H. Such identity is lacking in the four priority missions stated in extension's five-year program, and thus chemicals remain today as second-rate citizens in program structure and planning. This doesn't mean that chemical use should not continue to be incorporated in production education or broad mission planning as needed.

7. Participate thoroughly in the new chemical use assessment program to provide scientific data that can be used in both administrative and judicial decision making.

8. Develop a regional structure which will permit better exchange of information among extension trainers and chemical coordinators so that a more unified approach to public policy education can be realized.

9. Orient subject matter specialists to the potential value of consciously incorporating public policy activities as a part of their ongoing programs.

Although problems surrounding the use of chemicals in agriculture and food may seem complicated, it appears to me that we can be well on our way to a program if extension gets itself better organized in this regard.

The acceptance of subject matter specialists in public policy education is a first step. Equally, extension administration must accept the continuing importance of chemicals and their attendant problems and support consolidated programs at the federal and state levels.