

# STEWARDSHIP IN THE USE AND REGULATION OF FOREST CHEMICALS

LOGAN A. NORRIS

Pacific Northwest Forest & Range Experiment Station  
Corvallis, Oregon

PLEASE DO NOT REMOVE  
FROM FILES

Dr. Logan A. Norris. The use of chemicals in modern forestry is increasing in scope and importance along with the sophistication of management and the need to protect and enhance forest values. Dr. Josephson's presentation pointed out clearly that land managers are faced with: a steadily increasing demand for all forest products which must come from a steadily decreasing amount of land.

## THE ROLE OF FOREST CHEMICALS

A variety of forest chemicals are among the many tools foresters have available to do their jobs. The ammonia-based fire retardants are used to protect forest values and may represent the most intense chemical use on limited areas. Chemical fertilizers are being used more and more to increase values by stimulating tree growth. Fertilizers will become the most extensively used chemicals in forestry. Insecticides are used only sporadically on western forest lands, but at times they may be desperately needed to protect a resource.

Herbicides are the most widely used chemicals in western forests. They play an important dual role in the protection and enhancement of the growth of trees threatened by competition from other vegetation and in the rehabilitation of extensive acreages in the West which are dominated by brushy species. Herbicides are the most diversified of the forester's chemical tools because he used them for maintenance of road-side and right-of-way vegetation, enhancement and protection of forest trees, improvement of range, and establishment and maintenance of fuel breaks.

## STEWARDSHIP: RESPONSIBILITIES AND CONSTRAINTS

This panel is charged with balancing responsibilities and constraints in the theme of stewardship. The panel composition is an interesting blend — educators, a land manager, a member of a regulatory agency, and scientists. Each panel member has different responsibilities with respect to forest chemicals and stewardship. The scientist is charged with the development and dissemination of new knowledge. His stewardship is for objectivity, the solution of today's problems, and development of tomorrow's practices. The educator's stewardship is for people; he must prepare tomorrow's and refresh today's foresters so they can use forest chemicals effectively and with responsibility. The manager and the regulator I've left to last because I want to consider their stewardship in a little more detail.

### The Forest Manager

The manager is charged with being responsive to those he serves, but his responsibility, or stewardship, for the resource extends far beyond those he immediately serves. In his efforts to be both responsive to demands to protect and increase forest values and a conscientious resource steward, the manager must

consider the advantages and the disadvantages of chemical use.

Forest chemicals can:

1. protect or enhance values
2. reduce cost
3. help meet supply demands more promptly
4. help insure future supply
5. achieve environmental stabilization.

Their use can, however, also:

1. increase costs when treatments are ineffective
2. cause various degrees of environmental insult
3. require employment and training of more people with special skills
4. produce some fearsome public relations problems.

The forest manager has the responsibility of protecting and enhancing forest values of all kinds, but he operates under constraints. Some constraints are self-imposed and form part of the broader responsibility the manager has to society. Some constraints are imposed by society through legislation and regulatory agencies. The manager seems to be constantly fighting constraints, and yet they offer him some distinct advantages.

Constraints can:

1. provide mechanisms to insure that chemicals offered for sale are effective
2. help insure that the chemical is a safe tool and that it will be used in a manner likely to minimize environmental insult
3. reduce the probability the manager will incur some liability as a result of using a forest chemical
4. offer a fairly specific framework within which the manager can operate safely with chemicals.

There are some distinct disadvantages in the constraints imposed by others. These constraints can:

1. prevent the use of a badly needed chemical or delay response to an emergency to the point of excessive damage
2. reduce management flexibility
3. markedly increase the cost of chemical operations because of imposed control and monitoring.

### The Regulator

Regulatory agencies have a difficult job. They must be responsive to the public's wants and its best interests. The complexity of issues related to chemical use and land management makes it extremely difficult for the public to express its wants. What may occur is an expression of want that is not compatible with public best interest. Regulatory agencies must also be responsive to land managers, who are often concerned with immediate problems on a local geographic level. The use of a chemical to solve these problems may have low-level, long-term consequences the manager is not sympathetic with or does not fully understand.

Regulatory agencies must carefully weigh the consequences of both using and not using particular



chemical tools. On one hand use of a specific chemical may result in some level of environmental insult which is clearly in the area of the agency's responsibility. However, not using the same chemical may have long-term, far-reaching economic, sociologic, and ecologic impacts which are not clearly understood by an environmentally aroused public. It is in these instances that apparent public want and public interest may seem to be in conflict. Difficult value judgments are involved, but this is an important aspect of regulatory stewardship.

Both the public and the manager demand responsive, conscientious action from regulatory agencies. Stewardship requires the agency to evaluate, balance, and meet these demands in the framework intended in the legislation that established the agency.

### STEWARDSHIP OF CHEMICALS: TWO CASES

There are two critical questions which must be satisfied in meeting a stewardship commitment regarding forest chemicals:

1. Is there a need to use the chemical?
2. Is the proposed pattern of use environmentally acceptable?

How has the forestry profession met its stewardship of forest chemicals? Let's consider briefly two cases: 2,4,5-T vs. brush and DDT vs. Douglas-fir tussock moth. Let's look first at 2,4,5-T and brush control.

The supply of fiber to meet the growing demand can be significantly increased by insuring full stocking on forest lands. Gratkowski, Hopkins, and Lauterbach (1973) reported that more than 9 million acres of highly productive lands in the Douglas-fir and redwood regions of Oregon, Washington, and northern California are not fully stocked or not stocked at all. 2,4,5-T can help put this land in full production.

I have considered in detail the hazards associated with chemical brush control (Norris 1971). Based on a careful review of technical information and the long history of safe herbicide use in forestry, I conclude these chemicals can be used safely. Foresters have met their stewardship commitment regarding the use of 2,4,5-T.

DDT and the tussock moth present a more complex question (Inter-agency Tussock Moth Steering Committee 1973). I will not try to resolve the question but wish to raise some points which should be examined in terms of stewardship.

1. Is there a real need to use DDT to control the tussock moth? The answer depends on whom you talk to. The land managers responsible for the infestation area and those living nearby feel most strongly that the potential for damage by the tussock moth to their resource is unacceptable, and DDT may be the only effective tool for control. Those not directly responsible for, or tied to, the land and those at great distance have a different view. They are willing to accept a higher degree of damage by the tussock moth and trust in the natural cycles of the infestation and the use of other chemical and biological techniques to minimize future damage.

2. Can DDT be used safely? Again it depends from where you view the question. The forest manager and local residents view DDT as not acutely dangerous. In terms of the tradeoffs they can make, some low-level environmental insult from the chemical is considerably more acceptable than defoliation of their forests. For those at a distance, some chemical insult to the whole environment is less acceptable than the temporary disruption of far-away forest lands.

The manager and the local resident must not deceive themselves. The use of DDT will have some adverse biological effects, both locally and at considerable distance. Those at a distance must not deceive themselves. The use of DDT on this infestation will not result in the total destruction of any (or even serious disruption of most) biological system either locally or at a distance.

Ultimately it will fall to the regulatory agencies to determine the advisability of permitting the use of DDT, if such a use is requested. They must carefully weigh and balance the benefits and costs of both using and not using DDT to nearby and distance areas alike. Difficult value judgments are involved, but this is an important aspect of stewardship. Regulatory agencies must be responsive to those specifically seeking their assistance and also to all society in the framework intended in the legislation which established them.

I challenge forest managers and those in regulatory agencies to meet their stewardship commitments.

In the hearings on 2,4,5-T scheduled for 1974, and on requests to use DDT on the tussock moth, regulatory agencies have a clear responsibility to carefully assemble and evaluate the best technical information available and from this to synthesize policy and regulation which are firmly based on sound scientific data. Constraint for the sake of constraint is not part of good stewardship.

In my opinion, foresters have a good record in their use of forest chemicals. I offer as evidence the limited number of incidents and accidents involving chemicals in forestry, the environmental monitoring which is done by both public and private forestry in connection with chemical use. The record also includes the establishment of research groups to evaluate chemical impact on the environment, and the training offered both public and private professional foresters in the safe and effective use of forest chemicals.

In their zeal to protect and maximize forest values, however, foresters must guard against excessive and unsafe chemical use. They have clear responsibility to avoid the use of chemicals unless a real need exists and to insure that their patterns of chemical use are based on the best technical information about both chemical efficacy and safety. Responsible stewardship also includes continued monitoring of the effects of chemicals in the forest and research to determine more effective and safer means of using them. The use of chemical tools must be part of the education of new foresters to help insure their stewardship is both responsive and responsible.