April 28, 2011

Kean W. Steely, P.E.
Vice President – Engineering and Operations
Carroll Electric Cooperative Corporation
PO Box 4000
Berryville, AR 72616

Dear Kean,

Find below the summary of my findings associated with Carroll Electric Cooperative Corporation's use of herbicides as a part of their vegetation management program. Also included are my written responses to comments and questions posed by you, your board, and individual members over the past year.

Summary

I have reviewed the herbicide section of the Carroll Electric Cooperative Vegetation Management Plan and found the application methods and general practices to be in keeping with accepted industry standards.

The two most important procedures spelled out in the CECC Vegetation Management Plan are: (1) all herbicidal maintenance will be performed in accordance with all federal and state laws and regulations applicable to herbicidal application, and (2) all requirements of the herbicide labeling shall be followed at all times. When applied according to the label, it is highly unlikely that the use of herbicides by CECC in vegetation management will create problems for its customers.

Why use herbicides?

The short answer is that they are very effective for the control of brush species, most of which have extensive root systems. Using a cutting-only approach to brush control is ineffective because it typically results in rapid re-sprouting producing multiple stems where there was a single stem before. This increased density just makes brush control that much harder. Herbicide treatments allow control or suppression of many tree and brush species, roots and all. Herbicides give maintenance crews an opportunity to get ahead and thus increase the amount of time between line clearing efforts.

There is long-term university research showing that combining herbicide treatments with mechanical control in an integrated approach produces more effective brush control than mechanical methods alone. In a five-year study in Pennsylvania, the mechanical-only treatments had three times as many stems per acre when compared to herbicide-only or herbicide plus mechanical methods. This study is retrievable online at: http://joa.isa-arbor.com/request.asp?JournalID=1&ArticleID=205&Type=2

An additional drawback of mowing is that it is not very selective. It reduces the quality of the wildlife habitat compared to spot treating with herbicides. Spot herbicide application can target the taller-growing vegetation allowing low-growing grasses and forbs to spread. Once a low-growing cover is established, it reduces the need for repeat mechanical or herbicide treatments by competing with trees. Wildlife predation on tree seeds on a right of way also helps keep tree invasion to a minimum.

It is important to remember that the alternatives to herbicide use are not without their environmental impact. Mowing and cutting are almost always the first choice but may be more polluting and damaging to the environment. Chain saws and mechanical choppers burn more fuel and create more carbon emissions than a backpack herbicide crew. Other disadvantages of using only mechanical brush control are rutting and soil erosion from machinery, and destruction of animal nesting sites. In some cases, disturbed soil provides an opening for new invasive plants.

Cutting with human-powered saws can be environmentally sound but requires a lot of time and manpower. It is useful for small areas where there is a large, local volunteer labor pool or when money is no object.

Integrated vegetation management of a right of way is a tree-resistant but not a tree-proof means of reducing tree invasion. The integrated vegetation management method of right-of-way maintenance has increased the time between treatment cycles, thereby reducing labor and costs for right-of-way maintenance. If you would like to read a well written success story regarding integrated vegetation management at Gulf Power follow this link:
http://tdworld.com/mag/power_scientific_approach/index.html

How safe are herbicides?

Carroll Electric Cooperative is using a safe group of herbicides. They are essentially non-toxic to non-plant species at label use rates. It seems to me that use of herbicides by The Nature Conservancy to control invasive plants is an excellent endorsement of their usefulness and safety. They have found that chopping and digging are not always effective for eliminating many pesky perennial invasive plants. In many cases mechanical control makes the problem worse by spreading reproductive plant parts. Digging and chopping also disturb the soil and may encourage erosion and increased invasion by unwanted plants. The following sentence in italics is taken from The Nature Conservancy guide for using herbicides in natural areas to control invasive plants. *Modern systemic herbicides are frequently used to control invasive plants. Many of the modern herbicides that are used in natural areas target specific plant processes or pathways and are relatively harmless to animals.*

Newer generation herbicides used by Carroll Electric are applied at very low rates and not on an annual basis resulting in a very small amount of total herbicide use. These practices increase safety by reducing the potential for CECC customers to be exposed to the herbicides. The herbicides are largely applied on a spot basis, a very precise method of delivery. Spot treatment results in very little drift or runoff. In addition, herbicides are not applied to food crops or water.

Carroll Electric does not employ restricted use herbicides, therefore the products used by CECC may be purchased by any of their customers for use on their own property. More importantly, CECC applications are performed by or under the supervision of a licensed applicator.

What about water?

The potential for contamination of springs as a result of right-of-way herbicide use is a concern that has been expressed by some CECC customers. I recently tracked down research (a Master's Degree Thesis) that might help allay those concerns. In 1988 and 1989, Brian DeHart and Terry Lavy at the University of Arkansas conducted a survey in which they sampled 25 springs in Benton and Washington Counties in Arkansas. The water was tested for six herbicides (2, 4-D, simazine, atrazine, alachlor, metolachlor, diuron). No herbicide was found in any of the springs either year. In addition, CECC and the Arkansas Department of Environmental Quality have done some water testing in response to specific complaints and have not found any herbicide residues.

What are the effects of integrated vegetation management on wildlife and plant diversity?

There have been numerous studies looking at the effects of herbicide use on right of ways on plant diversity and wildlife. Establishing a dense, low-growing cover provides habitat for wildlife that prefer that environment. Most studies have shown that judicious herbicide use on power line right of ways caused an increase in plant species diversity and increased or had a neutral effect on the wildlife food value of the treated areas. Many of these studies are available free online in the Journal of Arboriculture. Follow this link to learn more:
http://joa.isa-arbor.com/request.asp?JournalID=1&ArticleID=134&Type=2

What about tank-mixing of herbicides?

Concern has been expressed about the possible effects of tank mixing two or more herbicides. Applicators tank mix to broaden the spectrum of brush control. For example, Arsenal herbicide, while very effective on many hardwoods, will not control pine. Mixing Accord herbicide with Arsenal fills that gap. Tank mixes with the herbicides used by CECC have shown an additive effect only. That is, the results are the same as you would expect if each product was applied separately. Synergistic or antagonistic responses due to tank mixing have not been observed with this group of herbicides.

Supporting the EPA's decision not to require testing of mixes are the following: (1) years of experience in agriculture and vegetation management with tank mixing, (2) the absence of a pattern of adverse or unexpected effects on the environment, (3) a growing body of scientific studies that suggest increased toxicity (synergism) of herbicide mixtures is a rare occurrence.

When we think of chemical interaction, we think of pharmaceuticals. With pharmaceuticals, the dose is designed to produce a biological response. Exposure to herbicides is regulated to be well below levels producing a response in humans and animals.

Please notify me if I can be of further assistance.

Sincerely,

John Boyd, Ph.D.