2,4-D: FEARS, FACTS AND FICTION

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I appreciate the opportunity to be with you this morning. I also appreciate your interest in 2,4-D and phenoxy products, since this is a product line to which we at DowElanco remain significantly committed as suppliers of technical grade material to other manufacturers. Why are we committed to 2,4-D? There are a number of reasons. First and foremost, 2,4-D is making a significant contribution as an economical means of weed control in a variety of markets. The extent of that contribution is suggested by recent studies evaluating the impact that would occur if phenoxies were lost to the North American market.

One study conducted by Agriculture Canada estimated a $448 million total annual impact if phenoxies were withdrawn from all Canadian markets.[1] Another study issued by the U.S. Research Group Resources for the Future has estimated a $180 million annual impact on American wheat producers alone if phenoxies were withdrawn.[2] The impact of the loss of phenoxies on other U.S. markets has not been assessed, though it would probably be safe to assume that the impact on North American as a whole would be in excess of $1 billion. So we're talking about a product here for which there is a real and serious need.

In addition, this is not a product that is important to only a few markets. Rather, this is the largest selling broadleaf herbicide on the North American continent. The agricultural market is very important to 2,4-D, with significant applications for weed control in wheat and cereals, corn, range and pasture, and so on. However, 2,4-D also makes significant contributions in forestry, in management of vegetation along utility rights-of-way, in weed control in the lawn and turf markets, and in a number of other uses. Whether used by itself or in a tank mix or premix with higher priced products, 2,4-D has made a significant contribution to weed control in this country for the past 40 years.

Of course, when we talk about 2,4-D, we don't want to forget its sister compounds in the phenoxies, MCPA and MCPP. About 55 million pounds of 2,4-D active ingredient are used in North America annually. This compares with about nine million pounds of MCPA and four million pounds of MCPP. Given the structural similarity of these compounds, the predominance of 2,4-D in this country, and the tendencies in scientific research to lump them all together as "phenoxies," it seems reasonable to suppose that, from an issues management standpoint, as 2,4-D goes, so go the rest of the phenoxies.

The importance of 2,4-D to end users is demonstrated by the strong industry and user support that exists for the product. U.S. reregistration of this compound is being backed by a $10 million fund directed by the Industry Task Force on 2,4-D Research Data, a group of companies sponsoring ongoing

health and safety studies intended to satisfy EPA requirements. That budget includes a host of scientific and public affairs initiatives intended to help you address issues in your own use of 2,4-D. We'll talk about those initiatives later.

I might also add that the National Wheat Growers' Association has co-sponsored with the Task Force a consensus-building scientific symposium on the weight of the evidence on 2,4-D held in the Washington, DC area in October, 1989. The symposium, convened by Dr. John Graham of the Harvard School of Public Health, was intended to bring together the best minds and establish an independent assessment of the weight of the scientific evidence on some major 2,4-D issues. More on that topic later as well.

A critical factor in our support of 2,4-D has been the extensive data base developed on the product over the past 40 years. Few products on the market today can match the scope of the research done on 2,4-D and its long history of practical experience in the field. Ongoing studies are being conducted by the Task Force now to update this historical research. Given the extensive data base, and despite recent controversy, the weight of the evidence is on the side of 2,4-D. Over the past few years, questions have been raised about the possibility of a link between phenoxies and cancer. Yet seven studies in four different nations have examined the issue and have not found such a link.

In addition, five independent reviews have been conducted on 2,4-D--by the Environmental Protection Agency,[3] Agriculture Canada,[4] The Canadian Centre on Toxicology,[5] The Council on Agricultural Science and Technology,[6] and most recently by the symposium just mentioned convened by the Harvard School of Public Health.[7] None of these reviews have found a link between 2,4-D and cancer.

Perhaps the most significant issue facing 2,4-D today is reregistration in the U.S., a process which is already well underway. This is not a process unique to 2,4-D. Rather all herbicides registered before October 1984 will have to undergo reregistration. As part of this process, EPA has identified those studies it believes are needed to assure that 2,4-D meets the agency's health and safety requirements. Where those studies either do not exist or need to be updated, the Task Force has committed to providing them, and in most cases work has already begun.

Perhaps the most controversial issues facing 2,4-D today are the recent findings of the National Cancer Institute in Kansas and Nebraska, research to which I've already alluded. As I'm sure most of you recall, in 1986 the National Cancer Institute showed a two-fold risk of non-Hodgkin's lymphoma, a rare form of lymph cancer, in Kansas farm workers who had used herbicides.[8] The study also showed a six-fold risk among a group of seven farm workers who had used herbicides more than 20 days a year. At the time, the study drew a lot of attention to 2,4-D because it was the most commonly used herbicide in the area. However, the study's findings ran contrary to the weight of the evidence on 2,4-D, and most scientific reviewers remained unconvinced that a link really existed.

NCI researchers have further claimed that a study of farm workers in Nebraska confirms the findings of the Kansas Study. This study shows a one and one-half fold increase among farm workers exposed to 2,4-D and a three-fold risk in a group of three farm workers who had used herbicides more than 20 days a year.[9] None of the increases in the Nebraska Study are statistically significant, which means they are so slight and based on such a small number of people that it is impossible to know whether the increases are real.

Publication of the Nebraska Study has triggered some limited press attention, and you can expect that advocates in your area may attempt to create a "rush to judgement" on this issue. However, the Nebraska Study is actually much weaker than the previous Kansas Study, which was not judged to have regulatory significance, and both studies run contrary to the weight of the scientific evidence on 2,4-D. In short, we expect to see some questions continue to be raised over the Nebraska Study, but we expect to see reason and good judgment prevail over the long haul.

Of course, whenever we talk about issues and 2,4-D it would be remiss not to mention the historical legacy of controversy that has been with us over the past decade. As an older product, 2,4-D has had ample opportunity to draw public criticism and has probably received more than its share. At times, the product has seemed to become a focus for a resistance by vocal minority to pesticides in general, By and large, however, this level of controversy has been manageable and can be expected to remain so.

When I talk about the weight of the evidence and about the independent reviews that have been conducted on 2,4-D, I want to be really clear on what I mean by that. So I've included some direct quotes from organizations and scientists that have conducted those reviews.

In March of 1988, EPA reviewed the scientific literature on 2,4-D and determined that a special review was not needed for the compound. EPA has stated that it may reconsider this decision later, following publication of yet another study, this one from Iowa/Minnesota and which thus far does not show a link between 2,4-D and cancer. However, the agency's position remains that "continued use of [2,4-D] while waiting for other data will not pose a significant hazard to the environment or public health."[3]

The Canadian Centre for Toxicology is another organization that has reviewed the weight of the evidence on 2,4-D. In the judgment of that panel, "Existing animal and human data are insufficient to support the finding that 2,4-D is a carcinogen" and the panel consequently found "insufficient evidence to conclude that existing uses of 2,4-D. . . pose a significant human health risk."[3]

Agriculture Canada, in its review last year, reached similar conclusions. According to that organization, ". . . the safety associated with 2,4-D remains acceptable. . ." and Agriculture Canada's position remains one of "continued but cautious use of 2,4-D."[4] Yet another organization that has reviewed the scientific literature on 2,4-D is the Council on Agricultural Science and Technology. According to the 1988 CAST review panel, ". . .persons are not exposed to hazardous amounts of 2,4-D when label recommendations and prescribed methods of application are used."[6]

Several years ago following publication of the Kansas Study, EPA asked a number of independent scientists for their perspective on the weight of the evidence. The significance of the Kansas Study was called into question when three out of four of EPA's reviewers declined to support the study's conclusions. Said one reviewer, Dr. Donald Morgan, of the University of Iowa School of Medicine, "I don't believe the 'weight of the evidence' indicates any excess risk of lymphoma among agricultural workers exposed to 2,4-D. I don't believe 2,4-D is a likely cause of cancer."[10] Dr. Morgan's conclusions were echoed by yet another reviewer, Dr. Brian MacMahon, of the Harvard School of Public Health, who said, "In my opinion, the weight of the evidence does not support the conclusion that there is an association between exposure to 2,4-D and (non-Hodgkin's lymphoma)."[11]

In a subsequent review, after examining the evidence presented by the Nebraska Study, Dr. MacMahon's views remained unchanged. Dr. MacMahon notes that both NCI studies use people's memories to estimate how much herbicide they were exposed to over a period of several decades. However, his review highlights what may be a disturbing bias in that almost all the excess risk in the Nebraska Study came from exposure estimates drawn not from those who used the herbicide but from their next-of-kin, whose memories are likely to be less reliable. In MacMahon's view, these results "must raise serious questions about the reality of the [study's findings]."[12]

In addition, preliminary data from the Nebraska Study were reviewed before the symposium convened by the Harvard School of Public Health, which has been previously mentioned. The report from the symposium called the link between 2,4-D and cancer "far from established." In explaining these conclusions, the report notes "that animal research provides little reason to expect that 2,4-D causes cancer in people and that studies of people occupationally exposed. . .while suggesting a link, does not establish a cause-and-effect relationship."[17]

So there really has been a lot of review. Few reviewers have been willing to dismiss the NCI's finding totally. Most reviewers consider the responsible position to be to evaluate these findings in the light of the total weight of scientific evidence on 2,4-D-- and those evaluations do not show a link with cancer.

In addition, almost all reviewers have called upon users of the product to use good judgment and follow label recommendations closely, since the NCI studies also suggest that any risk associated with the herbicide can be greatly reduced if workers wear protective equipment during mixing and application, and change clothes after finishing spraying.

One important step the Task Force is taking to manage these issues is to provide our customers and others with breaking news about 2,4-D in our newsletter, 2,4-Dispatch. Our goal is to provide a timely perspective on current events of importance to your business and also some more reflective pieces that consider the benefits of this product.

For those instances in which you need quick answers to some very specific questions of where you need brief scientific consultation or public affairs coaching to deal with a local issue, we have establish the 2,4-D Hotline, with a toll-free number in the U.S. (1-800-345-5109) and an international faxline (1-517-835-1305). The Hotline can get you rapid access to 2,4-D reports and independent literature that can support your use of the product.

As part of our package of initiatives, we at the Task Force are surveying the trade and popular press looking for bad news about 2,4-D. I'm not here to tell you that we can solve all the publicity problems this product has had over the past decade, nor can I tell you that every inaccurate article will get a response. But I can tell you that significant articles will get a response, and a response aimed at dialogue, not confrontation, and a response focused on correcting false impressions and providing future contacts, not on feeding the flames of controversy.

Since much of the remaining controversy around 2,4-D centers around the National Cancer Institute's Nebraska Study, the Task Force commissioned the previously independent review of that study by Dr. Brian MacMahon, Professor Emeritus, of the Harvard School of Public Health. While our industry has its own researchers with extensive pesticide related experience, we recognize the need in the public mind for this external source of validation, as a means of heading off the "rush-to-judgment" that occurs all too frequently when the popular literature considers new scientific reports.

I've already mentioned the Consensus Building Symposium held last year in Washington, DC, which was co-sponsored by the Task Force and the National Wheat Growers' Association. At that two-day session, 13 top researchers in government, academia, and industry met to establish the weight of the evidence on 2,4-D while considering preliminary data from the Nebraska Study. The report of that symposium has now been published, and we believe that it will go long way toward provoking a more thoughtful response to current events than we typically see with pesticide-related issues, and we expect that everyone involved will benefit from that.

Naturally, users of 2,4-D will want access to literature to support their positions. Our Task Force brochure, "2,4-D: The Facts," provides a brief synopsis of the issue for a general audience. A larger, more detailed White Paper is also available. In addition to the initiatives just discussed, we have also produced a 20-minute video featuring the independent scientist Dr. George Carlo, an epidemiologist; Dr. Michael Gough, a biologist and author on phenoxy issues; and Dr. Ian Munro, a toxicologist and head of the Canadian Centre for Toxicology. These three scientists summarize their perspectives on recent 2,4-D studies, in language suitable for a nontechnical audience.

In addition to the initiatives just discussed, the Task Force is also sponsoring new scientific research to help address some of the questions raised by recent studies.

Specifically, the Task Force is sponsoring work by Dr. Jack Mandel of the University of Minnesota School of Pubic Health to determine how well herbicide users can remember past exposures over a period of several decades. This is important since the conclusions of both NCI studies rely heavily on the memories of users and next of kin to estimate risk. Results from that study should be available before year end 1992.

Before closing, I should also note that in recent months, a study published in the *Journal of the National Cancer Institute* has raised some controversy in claiming a potential link between 2,4-D and cancer in dogs. Specifically, the article reported a slight increased risk of malignant lymphoma in dogs whose owners had used both commercial lawn care treatments and who had self-applied 2,4-D.

As a means of resolving this controversy, the Task Force asked Dr. Ian Munro of the Canadian Centre for Toxicology and Dr. George Carlo, Chairman of the Washington, DC based scientific consulting firm Health and Environmental Sciences to convene an independent scientific panel to review the strengths and weaknesses of the recent dog study and determine its place within the total weight of the scientific evidence on the safety of 2,4-D.

The six-person panel convened in response to the Task Force's request, combining expertise from the fields of epidemiology, toxicology and veterinary medicine. Panel members include:

Dr. Philip Cole, Professor and Chairman of the Department of Epidemiology at the University of Alabama at Birmingham.

Dr. Anthony Miller, Director of the Master of Science and Doctorate programs in Epidemiology within the Department of Preventative Medicine and Biostatistics at the University of Toronto;

Dr. George Carlo and Dr. Ian Munro, previously mentioned;

Dr. Keith Solomon, also of the Canadian Centre for Toxicology; and

Dr. Robert Squire of the Division of Comparative Medicine within Johns Hopkins University.

The panel has been asked to reach its independent conclusions. Its findings, which will be published in 2,4-DISPATCH, are expected in the first part of 1992. As you can see, the Task Force takes the defense of 2,4-D and phenoxies very seriously. We regard the kind of initiatives discussed here as an essential form of product support.

However, we need your support as well. Specifically, the support we need is your continued safe use of the product. There are so many different formulations that it's difficult to generalize about the safety precautions needed. But what is needed is the same kind of good judgment you would used in handling any pesticide. Read the label. Use the right kind of protective clothing for the job and keep it clean. Use common sense in spraying and disposal. In doing so, you help ensure that this product will be available to you for years to come. We've all learned from hard experience in the past that the price of keeping a product on the market is the commitment not to abuse it.

So the message I'd leave with you today is that both my company and the Task Force are committed to 2,4-D and to the total phenoxy business. We are committed to managing our operations successfully in an issues intensive environment. Through our work with the Task Force, we bring to bear the resources needed to manage tomorrow's issues for ourselves and our customers.

In the long run, I think we all benefit from that.

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