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## CHAPTER 15

"AGENT ORANGE IS JUST TOO POTENT A DEMON TO BE EXORCISED BY SCIENTIFIC FACT: IT MUST BE PROPITIATED."

### CONCLUSIONS AND IMPLICATIONS FOR THE FUTURE

A. L. YOUNG AND G. REGGIANI

As noted in the introductory chapter, it is our premise that the Agent Orange controversy involves more than just the examination and interpretation of scientific data. Indeed, it is clearly a "quality of life" issue, an issue full of human emotion, drama and tragedy. The scientific issues are complex, but careful health surveillance programs and epidemiological studies provide us with an understanding of the human toxicologic issues. It is, however, beyond the scientist to assess the human impact of having participated in a confusing and frightening war more than a decade ago in a tropical environment thousands of miles from home.

Many hands have worked at producing, developing, and taking to a resolution the controversy which surrounds Agent Orange. There is a never-ending list of books, articles, newsreels, television broadcasts, scientific papers and reports that have dealt with this fascinating and, at the same time, frustrating topic, fascinating because it has challenged the most skilled and educated minds to understand and disentangle the riddle of an extremely experimental toxicity of a chemical which seems to be hardly toxic for man, and frustrating because the perception of its risk for mankind has always been fraught with so many emotional and psychological, social, and political aspects which have made it almost impossible to come to a definition of risk and therefore to a resolution which would be satisfactory for all involved.

The perception and the level of acceptance of this risk have changed continuously during the past twenty years and are still a matter of dispute.

In this book we have made an attempt to take the matter from the very moment when Agent Orange was first produced and used in tactical military programs in the 1960's to the events which in 1985 crowned the twenty years of the controversy about its use and the consequences caused or allegedly related to its use. Each chapter has offered a piece of the whole picture, starting with Agent Orange's use in Vietnam for military purposes, through the identification of the dioxin contaminant, followed then by the first reaction to the contaminant's subsequent involvement in other episodes. From a localized and rather illogical source the issue has spread wider and wider and has finally involved the best resources, time, work, skill, facilities, and experience of the whole nation.

The dominant role played by the media in the controversy began in the late 1960's and early 1970's and was characterized by exploitation of all unfavorable news about the Vietnam war. The use of Agent Orange and other herbicides was a ready target for adverse coverage by the press. Unfortunately, attempts by the media to exploit unfavorable news adversely affected American attitudes toward Vietnam veterans. Ten years after Agent Orange was used in Vietnam, the media continued to criticize, exaggerate, and emotionalize the use of herbicides in jungle warfare, but, in this instance, they played reverse roles by casting Vietnam veterans in the image of victims.

Emotional role playing by the national news media has had tragic consequences for the American and Australian people in a number of ways. It has undermined national unity and

morale by promoting unfounded fears of a cancer epidemic, of increases in the number of children born with defects, and misguided ideas of a "risk-free" society. The loss of perspective in this issue has led to irresponsible and unwarranted action, e.g., prohibition or restriction of the use of herbicides in agriculture. But, perhaps the most serious consequence of the intense media campaign has been its negative impact on the Vietnam veterans, many of whom have been led to believe that Agent Orange and dioxin adversely affected their health and the lives of their children. The emotional impact of this fear campaign on the veteran and his family has been severe.

The chapter on the state of our knowledge of the animal toxicology limits itself to only a minimal part of the huge amount of work which has been carried out in the best toxicology centers and laboratories of this nation and of many other nations, too. It tells us that many aspects of the mechanism through which the contaminant of Agent Orange, dioxin, affects the organism are still unknown or not yet understood. If many questions have been answered, many others still puzzle our minds, and we do not know where and what to look at for filling the gaps.

The chapter on epidemiology makes once again clear to all of us how limited are our possibilities to find the evidence of an effect on human health when we cannot fix ourselves the dose at which a man has been exposed to the chemical as well as the time, duration and conditions of the exposure. Furthermore, it points out once again the difficulties in assessing whether a baseline condition of the human pathology (cancer, birth defects, abortions, infertility) has been modified if the effect does not significantly change the basic incidence and frequency of that pathology. It tells us also how long it takes to

plan, organize, carry out and evaluate epidemiological studies. It tells us finally that ten epidemiological studies and five health control studies are still under way and that it will be many more years before we can know their outcome.

Science, therefore, has still not provided the final answer for bringing to closure the Agent Orange controversy. Even so, the answers which have been made available up to this moment have provided to other forces of society the means to move on and make some very important decisions. The political and judiciary institutions of this and other countries have decided which health damages possibly related to exposure to Agent Orange can entitle the Vietnam veterans to compensation and have judged that the producers of Agent Orange have no legal liability for its use in the Vietnam War.

The role of the judiciary, e.g., the Australian Royal Commission of Inquiry, has been of outstanding importance for the scientific world in connection with the case of soft tissue sarcoma and its association with dioxin which was raised by several Swedish reports beginning in 1979. This association is fixed in the minds of many, including Congress, and clearly all scientists examining the dioxin problem and the episode of exposure to dioxin have had to account for this rare type of tumor, which in the United States has a death rate of 0.07 per cent. The judiciary, with its cross-examination procedure and direct confrontation of the ways and methods used by the authors for the assessment of their cases, took the function of the "science courts" of ancient notion. The additional evidence obtained directly from the scientists who found the association showed that many of their published statements were exaggerated or not supportable, that in their

assessments there were many opportunities for bias which had been ignored, and that these biases have been introduced in the collection of their data. The Royal Commission showed that their conclusion could not stand a logical and objective examination and had to be rejected. Moreover, it clearly showed that there are criteria that one can apply in closing off a scientific issue, i.e., the issue of the association of soft tissue sarcoma with dioxin.

In the opinion of one expert in cancer epidemiology known the world over, Sir Richard Doll, which was submitted to the Judge of the Australian Royal Commission in December, 1985, "the work of these authors should no longer be cited as scientific evidence."

To complete the picture we have added for the reader the stories of four episodes of dioxin exposure, each one adding to the whole picture by reporting different conditions of and different approaches to the same issue.

Agent Orange is indeed at the crossroads of science and social concern. Resolution of the controversy must come through a process that separates factual, scientific elements from social and political considerations. Once the scientific aspect is clearly defined, the issues can be partially assessed in the legal arena, but eventually they are seen as critical differences in value systems that too frequently place scientists, government officials, and individual citizens in adversary relations. In a free, democratic society, the public must eventually understand the truth and make the final decisions on issues relating to the quality of life. Thus, the key for us has been to help provide a basis for decision making.

It remains for us to express our opinion on the dispute that has offered too many contrasting and ever-changing aspects. First of all, did the controversy have any scientific, technical, political, or social reason to become, nationally and internationally, a most remarkable subject of concern during the last twenty-five years? This, we believe, is a moot question which nobody can decide. It has been, and to a certain extent still is, a part of our life which has to be accepted and respected both for itself and for the contrasts and emotions, honest work and efforts which it has enticed in this and in other nations. It could be argued that, with the state of our present information, the meaning of the Agent Orange controversy has been exaggerated and that dioxin today can be considered a matter of questionable importance. It could also be argued, consequently, that further investments in terms of manpower, facilities, time, and money to obtain a deeper and wider knowledge of the risks and hazards posed by dioxin are not justified anymore because they would not take us to a better understanding of the problem or that the advantage obtained would be minimal and not proportioned to the efforts required.

It should be said at this point that one must distinguish between the Agent Orange and the dioxin issues. While it is true that no more studies are required beyond those already running on Agent Orange-exposed Army and Air Force personnel, this does not apply to dioxin. If the Agent Orange controversy on one side has been settled in Congress and the courtrooms, the dioxin controversy is still very much alive and a source of great concern to the public. By dioxin controversy we mean that today we know that the dioxin which was the contaminant of Agent Orange, as well as all other dioxins belonging to the same chemical class, are a part of our environment.

Sizable amounts of these dioxins and of TCDD, as well, occur as a fallout of combustion elements and are part of a bio-accumulation process in the fish of the Great Lakes region, and elsewhere, and are therefore part of our food. We are not aware of any acute effect on the health of populations exposed to the dioxins either in the U.S. or in any other parts of the world. What we do know is that dioxins are a part of the group of chemicals which we are absorbing one way or the other in our bodies and that this is not an acute, occasional, accidental, or occupational kind of exposure, but a protracted, chronic exposure to quantities which are certainly minimal but for which the effects on our physiological functions and on our organs cannot be excluded and of which practically nothing is known.

It is therefore understandable that public concern and concern of the scientific and political institutions has focused on the potential implications of the dioxins for our health. The issue, therefore, is not the Agent Orange controversy but the broader issues of how to assess risks and estimate the hazards to people caused by the chemical which has given such a dimension to the Agent Orange controversy, namely, the 2,3,7,8-tetrachlorodibenzo-p-dioxin (TCDD).

Historians are not part of the process of risk assessment. Their function is to relate events accurately, without dramatizing certain facts and underestimating others. Historians must collect and put events in a certain perspective to provide the student of the past with the witnesses and the information which should help him in his judgment and equip him with the available tools for his task and profession. This is what this book is about. And if it accomplishes what it was meant to do, our labor has been well spent.