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Agricultural exposures and cancer

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Preface

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Between the 19th and 22nd of November 2002, a group of approximately 50 scientists and health professionals with experience or interest in the relationship between human exposure to agricultural chemicals and the potential for developing cancer came together for a symposium at Oxford University's Green College. It was the first scientific meeting of its kind, and it brought together epidemiologists, toxicologists, and exposure assessment experts working in a variety of professional settings, including academia, government and industry, and nongovernmental organizations. The symposium was sponsored by CropLife International, CropLife America, and the European Crop Protection Association, all of whom provided financial support, and by the International Agency for Research on Cancer.

The symposium was designed to foster the interdisciplinary consideration of technical issues. For this reason, all the sessions were held in plenary mode so that scientists could interact across the normal, disciplinary boundaries. In addition, discussants from two or more disciplines were scheduled to provide perspectives and commentary on the papers within each session. For example, discussants for a session on the over- and underestimation of exposure included an epidemiologist and a toxicologist. In the subsequent comment and question-and-answer period, professionals from epidemiology, exposure assessment, and toxicology engaged further in extensive discussion. Finally, a designated rapporteur kept a record of the discussion in order to help form a detailed general summary of the conference with the potential that common recommendations for future research might emerge from the meeting's last session.

In this special supplement of the *Scandinavian Journal of Work, Environment & Health*, readers will be able to explore the scientific presentations, follow the stimulating discussion periods, and, ultimately, derive a comprehensive picture of what scientists then believed was the knowledge base and the future needs for answering the important questions being asked in relation to the potential for cancer developing as a result of direct or indirect exposure to pesticides. Along the way, of course, many new questions were raised; this was only to be expected, given the open sharing of information and ideas that occurred. Since several ongoing research projects were presented at the symposium, including the largest studies ever conducted, the meeting also served to stimulate a desire for the attendees and others to keep in touch with future progress. As such, the results of this symposium will serve as a record or "bookmark" of information on agricultural exposures and cancer as it was available and understood in the autumn of 2002.

The first three scientific sessions were devoted to epidemiologic issues and included presentations from the United States Agricultural Health Study, a review of male and female reproductive cancers, non-Hodgkin's lymphoma, and childhood cancers with respect to farm chemical exposures, special susceptibility issues (host factors) as they relate to the design and interpretation of epidemiologic studies, and the effect of exposure measurement error on studies' outcomes.

The second triad of sessions focused on exposure assessment and covered technical and statistical issues related to its measurement. The particular strengths, as well as the lessons learned, from biomonitoring studies, including the United States industry-sponsored Farm Family Exposure Study and United States government Exposure Monitoring Survey within the Agricultural Health Study, were also reviewed and discussed in detail. Finally, attention was given to questions attending the analysis of exposure information in the context of nonagricultural risk factors for cancer, and the best means of treatment were reviewed.

In the final scientific sessions before the summary, toxicologists reviewed the current status of carcinogenicity testing, including bioassays, the potential genotoxicity of pesticides, and statistical issues in testing chemical formulations, and pesticide metabolism and genetic polymorphisms. This

updating helped provide a valuable perspective of the design and conduct of epidemiologic and biomonitoring studies, especially as they relate to putative modes of action and assumptions about disease induction period and latency.

Finally, the symposium participants were challenged to try to condense and summarize a large amount of information and opinion, freshly presented, in a way that could advance the state of science and, eventually, public health decision making. While an able effort was made, it was clear that time was needed to reflect on and synthesize the weighty evidence presented. For this reason, perhaps more than any other, this supplement will serve participants and nonparticipants alike by providing a central record of the thoughtful and stimulating presentations and discussions that took place at the Symposium. As new findings emerge in the published literature and elsewhere, one can return to this issue to get a bearing on where the state of the science was at the time and how interested scientists can contribute toward a clearer and better informed state tomorrow in the interest of making informed decisions about pesticide exposures and potential health outcomes.

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