

DIOXIN 1992 – TAMPERE, FINLAND

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Introduction

The twelfth in the series of international dioxin conferences was held August 24-28, 1992 in Tampere, Finland more than 100 km north of the capital, Helsinki. This was the first time that the conference had been held in this country and the second time for the Nordic region. The venue was the University of Tampere in a relatively unknown part of Finland. The topography of the region was similar to northern Ontario - evergreens and rock everywhere. As an aside, daylight at this time of year in a northern latitude is generally considerably longer than elsewhere. As a result, the participants were blessed with longer sunlight and congenial working conditions for their reporting and interactions. However, an important reason for organizing the conference in this Finnish city was the existence in this region of a large pulp and paper industry - an industry which was under environmental scrutiny from the presence of dioxins and furans in some of their products. In fact the pulp mill in Tampere had recently undergone renovation in order to address and reduce environmental pollution including that related to dioxins and furans. Finland like Scandinavia had always been actively involved in environmental issues on persistent organic pollutants (POPs) and had recently taken steps to upgrade their capacity not only to measure these compounds but also to address issues of toxicology and risk assessment. It was in this context that Tampere was chosen to hold the Twelfth International Conference on Dioxins and Related Compounds in the summer of 1992. In keeping with the increased interest and international scope of the meeting more than 500 scientists and others from 26 countries participated in the symposium which produced more than 300 presentations equally divided between oral and poster format.

Organization and Venue

The meeting was hosted by the Finnish Institute of Occupational Health (FIOH) in collaboration with the University of Tampere where the sessions took place. Participants either walked or took a short bus ride from the hotels in the city to the university. As in previous years, management of the symposium fell to the National Organizing Committee mainly drawn from the FIOH who organized and carried out the necessary operational requirements. This group was aided, particularly in the scientific content, by a national advisory committee composed of Finns. Both groups were guided by consultation with the International Dioxin Advisory Committee at that time headed by Otto Hutzinger. As a consequence of the composition of the hosting group, there was a larger than usual scientific contribution in the fields of sources, toxicology, risk assessment and epidemiology. This contrasted to previous dioxin meeting where analytical methods and chemistry had tended to dominate. On the Tuesday evening,

registrants were treated to Finnish chamber music and on the Thursday evening, after a short bus excursion, to a banquet in the elegant Rosendahl Hotel.

Sessions and Content

Don Patterson of CDC, U S A gave an overview of attempts both past and ongoing to reduce the cost of dioxin determinations. Even at this relatively early date, the limitations of sample preparation and data manipulation had been recognized by researchers in the field. As a result techniques such as supercritical fluid extraction (SFC), automated preparation systems, and principal component analyses (PCA) were being actively investigated.

Probably the largest contribution to the meeting was that dealing with formation and sources of exposure to dioxin like compounds. Both Hutzinger, Germany and Rappe, Sweden spoke in detail on these aspects. They noted that in order to understand and deal with human exposure to these compounds, scientists had to study and understand issues such as deposition, evaporation and degradation. In keeping with the recent and current interest of dioxins from pulp and paper, there were two extensive reports from two countries on the paper industry. The Canadian summary of the 46 pulp and paper mills in that country by Whittle et al. resulted in closures and limitations on local fishing industries. The Finnish report by Passavirta et al. studied an extensive list of chemicals in biosolids originating from pulp and paper and indicated the detrimental effect on wildlife when biosolids are used as a fertilizer. Using either human milk, blood or adipose as media for analysis, there continued to be numerous reports of dioxins, furans and PCBs in these tissues. All of these pointed to significant exposure of humans to these compounds. A presentation by a well know Swedish researcher studied the intake and excretion of dioxins in two subjects using human faeces. The results were somewhat puzzling since there appeared to be more excretion than intake. This finding evoked considerable comment from various participants some of which were scientific and some not so scientific.

The third and last grouping of sessions dealt with epidemiology and risk assessment. The concept of TCDD toxic equivalents (TEFs) had become more and more ensconced in the field of dioxins. In fact most researchers presented their results with this format attesting to its conciseness and comparative feature. This scientific tool was supported by detailed presentations on TEFs given by Safe and Birnbaum of the U S A both of whom noted that the TEF factors were order of magnitude estimates of relative toxicities. Other toxicological aspects of dioxins were presented which supported the Ah receptor as the mechanism for most of the effects of these compounds. The numerous incidents of elevated human exposure to dioxins and related compounds were used by a number of groups to illustrate adverse effects to people. These included incidents such as Seveso, phenoxy herbicide occupational exposure, Arctic peoples, and the rice oil poisonings. In the latter two cases, effects due to elevated exposure were observed in the Arctic on increased head size for newborns and decreased IQ in children from the Yucheng rice oil poisonings.

The accounts of Dioxin 92 in Tampere were published in 1992 as extended abstracts in *Organohalogen Compounds* as volumes 8, 9, and 10. Selected papers from the abstracts which contained additional information subsequently appeared as a special issue of *Chemosphere* in 1993 with the Finnish Occupational scientists as guest editors.

Acknowledgements

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References

Aitio A, Hesso A, Luotamo M, Rosenberg C. (1993) Chlorinated dioxins and related compounds 1992. *Chemosphere* 27(1-3)1-516 July/August 1993.

Organohalogen Compounds volume 8 (1992) . Analytical methods, formation and destruction, ecotoxicology.

Organohalogen Compounds volume 9 (1992). Sources of exposure.

Organohalogen Compounds volume 10 (1992). Toxicology, epidemiology, risk assessment and management.