

DIOXIN 1984 – OTTAWA, CANADA

Ross Norstrom¹ and Jake Ryan²

1 Department of Chemistry, Carleton University, Ottawa, ON K1C 5P5, Canada

2 Health Products and Food Branch, Health Canada, Ottawa, Ontario K1A0L2, Canada

Introduction

The fourth in the series of international ‘dioxin’ conferences was held in Ottawa, October 16-18, 1984. This was the second time that the conference had been held in North America after the 1981 dioxin meeting in Washington, DC. There was little interest in PCDDs or PCDFs in Canada until several reports of 2,3,7,8-TCDD contamination in fish from the Great Lakes and tributaries came out in the 1978-1980 period. It was not until the late 1980’s that bleached kraft mills, a major industry in Canada, were discovered to be sources of PCDDs and PCDFs in the environment, so the Great Lakes remained the focus for most of the early 1980s. Canada had always been a leading country in the study of organohalogen contaminants in the environment, so the infrastructure was there to rapidly respond to the newly perceived threat in the Great Lakes. By the early 1980s, three federal government laboratories (in the departments of Environment, Health and Agriculture) in Ottawa had developed PCDD/F analytical capability. The Ministry of Environment of the Province of Ontario had also built a strong analytical capacity. Other government and private laboratories in Canada were gearing up, as were the eco- and human toxicologists, to deal with dioxin issues. As a result of this burgeoning activity in Canada, preliminary data on 2,3,7,8-TCDD in Great Lakes herring gulls and commercial and sports fish were presented at the First International Symposium on Dioxins and Related Compounds in Rome in 1980¹ and related symposia of the American Chemical Society in 1982², establishing Canada as a relatively new, but significant player in the rapidly expanding ‘dioxin’ science. It was in this context that Ottawa was chosen to hold the Fourth International Conference on Dioxins and Related Compounds in 1984.

Organization and Venue

The organizing committee for Dioxin 1984 was chaired by the late Martin Boddington, who had recently been given charge of dioxin issues in the federal government department, Environment Canada. Leslie Whitby (Environment Canada) organized a session on Issue



Management, Ross Norstrom (Environment Canada) organized the Analysis and Fate session, Phil Barrette (Agriculture Canada) was the Poster Convener, Don Grant (Health and Welfare Canada) organized the Toxicology and Epidemiology session, Jake Ryan (Health and Welfare Canada) organized the social events and was also an invited speaker, and B. Melbourne (Environment Canada) looked after administration. The

International Advisory Committee at that time consisted of Otto Hutzinger (Germany), the godfather of the symposium series, R. Frei, (Netherlands), Ernst Merian (Switzerland), G. Reggiani (Switzerland), and F. Pocchiari (Italy).

The sponsors of Dioxin 1984 included Environment Canada, Health and Welfare Canada, Agriculture Canada, Fisheries and Oceans Canada, National Research Council of Canada, The International Association of Environmental Analytical Chemistry and the Intl. Society of Toxicological and Environmental Chemists.



The meeting was held in the Holiday Inn in the centre of Ottawa. The registration fee was an astronomical \$70 (Canadian), which included the cost of lunch for three days, the cost of the proceedings, and a mixer on the evening before the sessions began with canapés and *complimentary bar*. Even for 20 years ago, this was an inexpensive conference. How things have changed! There was also a banquet and tour available for \$30.

The pre-banquet bus tour of the Gatineau Park in Quebec was billed as a wonderful opportunity to experience the beautiful fall colours. In any other year, the park would



have been alight with golds and oranges of maple trees (as in the picture). Unfortunately, a relatively cold September and several storms had blown off all the leaves. The attendees gathered at Kingsmere in the Gatineau among the ruins and statues favoured by the former prime minister, Mackenzie King. It was a cold and blustery day, so the tour turned out to be primarily a chilly view of tree trunks and branches. However, the banquet, which was held at the

Aylmer Country Club near the Champlain Bridge, in a setting beside the Ottawa River made up for the lack of leaves.

In their wisdom (perhaps faulty in retrospect), the organizers chose to limit the number of speakers so that no overlapping sessions were required, and included a category of ‘invited posters’ and panel discussions to allow broader participation. This structure was intended to allow maximum participation and interaction among the attendees. Speakers were chosen to present a representative cross-section of leading, current dioxin research, but of course coverage could not be comprehensive given the variety of topics to be covered. Inevitably, there were some people who felt slighted by not being asked to present a talk.

We have no record of total number of attendees, but it was likely in the 200 range. There were 22 oral presentations, 12 invited posters and 36 contributed posters. The great

majority of presenters and attendees were from North America, including most of the major players in the dioxin field at that time in the USA. There were only 3 oral and 8 poster presentations from Europeans, and one poster from a Japanese group. However, the European representation comprised many of the leading or soon-to-be leading scientists in the field, including Christopher Rappe, Otto Hutzinger, Karlheinz Ballschmiter, Umberto Fortunati, Kees Olie, Hans-Rudi Buser and Martin van den Berg.

Sessions

The opening address was supposed to have been given by the federal Minister of the Environment at the time, the Honourable Charles Caccia. However, Canada was in the midst of a federal election within weeks of the conference, which prevented the minister from attending. As a footnote, the Liberal government lost the election, ushering in a new and difficult era for dioxin science in Canada over the next 2-3 years. The opening



address was given by R.W. (Bob) Slater, Assistant Deputy Minister, Environmental Protection Service³. Bob had been at the forefront of the Great Lakes dioxin issues in the early 1980s in his previous position as Director General, Ontario Region, Environmental Conservation Service. Interestingly, Bob began his address by decrying the lack of faith that the public had in the white-coated scientist as result of the rise of chemophobia, and pointed out the

need to establish a bridge between science and public policy. He went on to suggest that the dioxin issue was a good case study of how not to protect the environment from chemicals: an *a posteriori* reaction to mass spectrometry investigations. In many ways, his ideas presaged both the Precautionary Principle and Life Cycle Assessment of chemicals.

The first day was devoted to a session on *Source Determination and Environmental Fate*, chaired by Ross Norstrom of Environment Canada. This session also included analytical chemistry presentations. The session opened by an overview of the subject by Otto Hutzinger. There were five other oral presentations, ranging in topic among isomer-specific analysis, physical constants, and monitoring of Great Lakes sediment, seabirds and fish. The overwhelming majority of the posters (34 out of 48) were related to this session. In his summary of the session, Otto Hutzinger mentioned the considerable advances that had been made on sensitivity of analysis, as well as isomer-specificity⁴. He also emphasized the importance of incineration as a major source of dioxins (and furans) in the environment, and



commended 'someone' for being brave enough to make some estimates of loading to the Canadian Environment from this source. Research presented at this session clearly showed the preference for bioaccumulation of the 2,3,7,8-substituted PCDDs and PCDFs by fish and rodents.

Day two of the symposium was focused on *Toxicology and Epidemiology*, chaired by Don Grant of Health and Welfare Canada. There were 6 oral and 13 poster presentation presentations in this session. R.J. Kociba (Dow Chemical) concluded that the session was



best summarized under four headings: Quantitative dose-response (Ah-receptor and enzyme induction studies), Bioavailability from various matrices, Interspecies comparisons and extrapolation, and Retrospective human tissue levels and health parameters⁵. Stephen Safe summarized his recently published findings on the induction potencies and receptor binding affinities of several TeCDFs and PeCDFs and showed that there was rank-order correlation between induction potencies and *in vivo* toxicity. This was an important step forward in pointing out the importance of PCDFs in integrated 'dioxin' toxicology. There were several papers on bioavailability, but it was concluded that that the whole area needed 'clarification', because there appeared to be several inconsistencies. Data on human tissue concentrations of PCDD/F congeners other than 2,3,7,8-TCDD were presented by Jake Ryan, clearly showing that TCDD should not be the sole focus of attention.

An epidemiological study on Ranch Handers (US servicemen exposed to Agent Orange) was presented which showed no statistically significant differences in the exposed and control groups in illnesses commonly attributed to dioxin exposure, roughly 10-20 years after exposure.

The final day of the symposium was dedicated to Issue Management, chaired by Leslie Whitby (Environment Canada). There were eight oral presentations in this session. No posters dealt with issue management. Most presentations were concerned with specific incidents: Seveso, Italy, trichlorophenol plant explosion; Times Beach, Missouri, contamination; Great Lakes contamination; and the Binghamton, NY, transformer fire. One presentation summarized the US federal epidemiological studies, and one was intriguingly entitled, "Who can you believe?" This was a seminal (and likely terminal) presentation by a science reporter, Jim Ferguson, of the *Globe and Mail* (Toronto) newspaper. He commented that "...in doing the research for this speech, I've found more dissembling on the subject of dioxin than I've found in virtually any other subject on which I have reported in a 15 year journalistic career"⁶. While Jim goes on to lambaste chemical industry for cover-ups associated with trichlorophenol-related dioxin problems in

the Great Lakes basin, he was also skeptical of government information. This article is worth a read, even today. Martin Boddington (Environment Canada) summarized the session⁷. He rather bluntly stated that there were those areas/incidents where something was done “to keep the public happy, healthy and safe in grave uncertainty,” (Missouri, Binghamton, Seveso), whereas in the Great Lakes, the dioxin issue was bogged down because of litigation (in the USA) to determine parties responsible to pay for the cleanup. Martin also decried the “out of sight, out of mind” syndrome that has plagued PCB and DDT issues to this day – once a chemical is banned or emissions are controlled, the problem is deemed to have disappeared.

At the rump session, the concept of TCDD toxicity equivalents using acute toxicity or *in vitro* weighting schemes was floated. Although no consensus was reached, it was a historic discussion that undoubtedly influenced movement to the now widely-accepted TEF/TEQ scheme for integrating TCDD-like toxicity from multiple chemical exposure⁸.



Dioxin 1984 proceedings were published in *Chemosphere* (vol. 14, issue 6/7, 1985), with the organizers as Guest Editors. *Chemosphere* remained the vehicle for publication until Dioxin 1989 in Toronto, the second of the symposium series held in Canada. After 1990 the symposium and number of contributions had grown so large that the proceedings became special publications of Ecoinforma Press.

Acknowledgments

Photos of Ottawa and Gatineau Park by Ross J. Norstrom, © 2003, 2005.

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