



HAL
open science

The use of dendrochemistry to reveal pollution history

Michel M. Chalot, Francois F. Beaujard, H el ene H. Roussel, Chris C. Balouet

► To cite this version:

Michel M. Chalot, Francois F. Beaujard, H el ene H. Roussel, Chris C. Balouet. The use of dendrochemistry to reveal pollution history. 14. EuCheMS International Conference on Chemistry and the Environment (ICCE), European Association for Chemical and Molecular Sciences (EuCheMS). Bruxelles, BEL., Jun 2013, Barcelone, Spain. pp.107. hal-00964815

HAL Id: hal-00964815

<https://hal.science/hal-00964815v1>

Submitted on 3 Jun 2020

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destin ee au d ep ot et  a la diffusion de documents scientifiques de niveau recherche, publi es ou non,  emanant des  tablissements d'enseignement et de recherche fran ais ou  trangers, des laboratoires publics ou priv es.

Chalot M., Beaujard F., Roussel H., Balouet C., 2013. The use of dendrochemistry to reveal pollution history. 14th EuCheMS International Conference on Chemistry and the Environment (ICCE), Barcelona., june 2013. Poster + abstract.

The use of dendrochemistry to reveal pollution history

(1) *Université de Franche-Comté, UMR6249, Laboratoire Chrono-Environnement, Place Leclerc, 25030 Besançon, France.*

(2) *Université de Lorraine, Interactions arbres-microorganismes, UMR 1136, Vandoeuvre-les-Nancy cedex, F-54506, France.*

(3) *UMR 547, PIAF (INRA-Univ. Blaise Pascal), INRA Centre de Clermont-Ferrand, Site de Crouelle – 234, Av. du Brézet, 63100 Clermont-Ferrand Cedex 02*

(4) *ADEME, 20 Avenue du Grésillé - BP 90406, 49004 Angers cedex 01*

(5) *Environment International, 2 ruelle du Hamet, 60129 Orrouy*

michel.chalot@univ-fcomte.fr

Tree rings provide a record of environmental change within the biological requirements of tree survival. Dendrochemistry has successfully applied several analytical techniques for solidstate analysis (e.g., energy dispersive X-ray fluorescence (EDXRF), particle-induced X-ray emission), analysis of wood extracts or digests (e.g., inductively coupled plasma-mass spectroscopy (ICPMS), atomic emission spectroscopy (AES)). EDXRF methods tend to be favored largely because of the capacity for simultaneous analysis of 31 target or marker elements and compounds at a high spatial resolution (50 μm) across the tree-ring sample. In this study, we describe the dendrochemical investigation methods and results in known pollution cases, contaminations with PAH, HVOC, PCB and BTEX or metallic compounds, within the course of an international project named PIT (pollution investigation by trees). Since PIT was to run over 40 cores for its dendrochemical investigations, and owing to the complexity of handling such large files combining serial entries, multiple compounds, (up to 200 000 data entries per tree core resulting from line scanning the cores every 50 μm and over 30 analytical data gained at each point) and a variety of computational operations needed, a Microsoft Excel template was developed and named SCANCHEM. This template eases data preparation and organization of dendrochemical analyses and data exchanges within the scientific team.