

# Debromination of PBDEs in DE-83<sup>™</sup> Technical Mix by electrolysis

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### Introduction

RDE-209 is the major component in DecaRDE. There is

Photobosis of EDE-209 atlinuits lower beominated dishered

Mentiled resolute from the metabolic transformation of RDEs

Electrochemical roduction is by nature an electron transfer process. Hence the structure of this work was to compare the electrochemical debonination of communical DecaRDE (DE-SU<sup>30</sup>) in the presence of water with the analogous reloctschemical and metabolic rescence.

# Experimental

#### Electrolysis Experiments

Electrolyses were performed in an undivided cell with fixed relations black electrodes. DE-53 <sup>th</sup> (Grant Laker) was platinum black electrodes. DE-53<sup>20</sup> (Goast Lakes) was disorbord in fundby detilled THF (Adhish) (as 1 mg/mL) containing traduct/lemension pendotexte (Fildas), as supporting electrolyte (21 mmol.), and water (IPEC Goale

# High Resolution Gas Chromatography/High Resolution Mass Snertrometry (HRGCHEMS)

The analyses were conducted on a HP 9999 HROC with a JAW When Antropos Ultime (EON). The implementation was done in splitters model inporter temperature 200°C, constant He flow rate 1.25 nd. initia). The temperature program was 200°C (1 min hold), 12°Cmin to 200°C, 20°Cmin to 127°C (10 min hold).

The mass spectrometer was operated in selected ion monitoring (SIM) mode (E1+) with resolution >10,000 in each of fice

### Results & Discussions

Technical Decalif26 has higher soliability than pure RDI-209 in poup using Wellington Laboratories' window defining micture (MULWI) diseases 11 and was computed for the lower RVE

### Figure 1. Window Defining Mixture BDE-WD.



Electrolysis of DE-8374 in THF in the resource of water availed in the formation of a complex mixture, containing di-through nonar bromodiphenyl ethers.

The receiveries for most concerners were near 198%, excert for the mono-BDEs #-10%2 and the DV-BDEs 75-85%2 where

#### Figure 2. Products of DE-03 Electrolysis.



The data suggest a rapid, sequential debromination under our

Experiments in the presence of D<sub>2</sub>O wave used to probe the mechanism of electrolytic determination (Figure 3) Followie electron transfer, the radical axies can either accept a proton  Figure 3 Marchaelers of Datasetisation



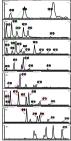




The debrominated RDE modects obtained by electrobolic troat[5] tablouth more moducts were identified in our

We note a definite preference for debromination at the

Figure 6 MBC CMBMC analysis of the spectrum whether



Electrochemical delevaniantics of BOE-300 involves assessful

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