



# **French measurement campaign of PCDD/Fs, HCB and PCBs from biomass boilers**

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# **1. Wood combustion in France and former studies**

## **2. New study features**



# Wood combustion in France

- Biomass = alternative to fossil fuels
- Wood / Share of energy production
  - Domestic heating = 85%
  - Utility / industrial boilers = 15%
- EU and French legislative context sets ambitious goals in terms of renewable energy production
  - 2005 French law related to the French energy policy orientation programme: (1) +50% the share of renewable thermal energy (2005-10), (2) biofuel = 7% of all fuel used in 2010.
  - 2007 EU renewable energy roadmap (COM(2006)848): EU to achieve a contribution of 20% of its energy mix from renewable energy sources by 2020. Current target (12% in 2010) will not be met.



# Wood combustion in France (ctd)

- Utility / industrial biomass-fired plants
  - 1999: 500 plants in operation
  - 2000-05: +1.400 utility plants and +480 industrial plants
  - Higher performances in terms of energy efficiency
  
- Less fossil fuel consumption is
  - 2000-07: less fossil fuel consumption = 320 ktoe
  - New objective 2007-10 = 290 ktoe
  
- Trade-offs on air emissions: POPs, HM, PM10/2.5, VOCs, NOx



## Former studies – presented at the former mtg

➤ 17 tests – data 2000-03

Natural wood		Non natural wood	
Concentration ng I.TEQ/nm <sup>3</sup>	EF pg I.TEQ/MJ	Concentration ng I.TEQ/nm <sup>3</sup>	EF pg I.TEQ/MJ

Results

0.019	9.1	0.069	40.1
0.004 - 0.047	0.8 - 24.7	0.011 - 0.285	0.8 - 184

- Natural wood : low emissions, whatever the thermal input is
- EF = 37-40 pg I-TEQ/MJ (both natural and non natural wood / combustion installations)



## New study (2007-08)

- Tests achieved by one laboratory
- On 10 boilers
- Thermal input range = 320 kW – 6 MW
- (half of them being < 1 MW)
- Several fuels: wood chips, straw, bark, sawdust, crushed palets, non hazardous industrial wastes, related products from sawmills, particle board wastes, inc. some fuel mixtures.



## New study (2007-08) - ctd

1. Measurements on fuels - Net calorific value, Ash content, moisture content, size distribution, HM, chlorinated organo-compounds
2. Measurements on solid residues - Size distribution, unburnt residues content, HM, PCDD/Fs
3. Air emission measurements – flow rate, PCDD/Fs, HCB, PCBs, PAHs (+ PM10/2.5, NO<sub>x</sub>, CO, VOCT, SO<sub>x</sub>)
4. Energy balance – energy efficiency of the boiler



## **New study (2007-08) – ctd2**

1. Started : august 2007
2. Campaign : dec 2007 – march 2008
3. Final report : july 2008
4. Paper will be submitted to Dioxin2008