



## Input of organic pollutants in soil through compost application: possible transfer to plants

S. Houot, M. Deschamps (1)  
V. Brochier, C. Lhoutellier (2)

1. INRA, 78850 Thiverval-Grignon, France  
2. CREED, Veolia Environment R&D, 78520 Limay, France







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### Context and objectives

- ✓ Composts : important sources of OM for soil where animal breeding has disappeared.
- ✓ Objectives: to evaluate their positive effects in relation with the type of compost and their possible negative impacts on agrosystems (soil, plants, water)?
- ✓ **Initiation of Qualiagro field experiment in 1998.**
- ✓ **Input of organic pollutants (OPs) and possible transfer to plants.**






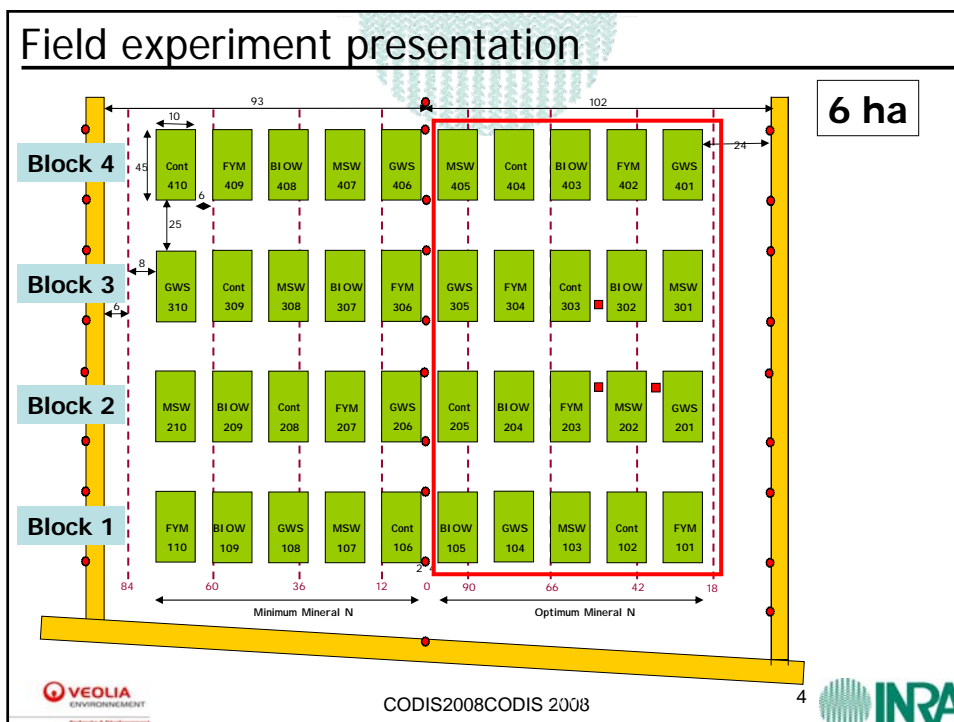
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### Field experiment presentation

- **4 organic amendments :**
  - Municipal Solid Waste compost (MSW)
  - Biowaste compost (BIOW)
  - Sludge co-composted with greenwastes (GWS)
  - Farm yard manure (FYM)
- + **control without organic application**
- 2 levels of mineral N fertilization (optimum and minimum)
- Wheat – Maize rotation : **OPs analyzed in the grains**
- **Spreading in September**; 5 applications in 1998, 2000, 2002, 2004 and 2006: **4T C/ha. Analysis of the amendments: OPs**
- **Soil sampling in each plot** (10 samples, ploughed layer) **before each spreading : OPs ...**



### Analyzed OPs

| OPs       | Analyzed matrices  |
|-----------|--|
| 16 PAHs   | Amendments   |
| 7 PCB     | Soils<br>Grains (since 2004)                                   |
| Phtalates | Amendments (since 2002)  |
| NP-NEP    | Soils (2006)   |
| LAS       | Grains (since 2004)  |
| PCDD/DF   | Amendments (since 2002)<br>Soils (2006)<br>Grains (since 2004) |

⇒ always < QL

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### Organic amendments: PAH & PCB concentrations

Thresholds defined in quality standards: **NFU 44-051** **NFU 44-095**

N=15

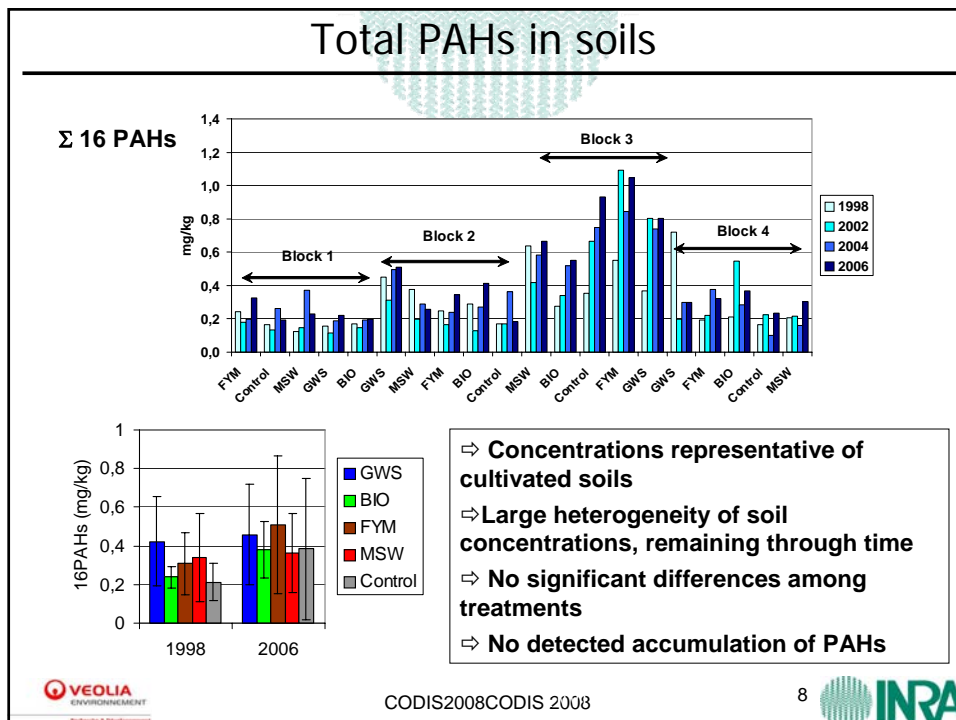
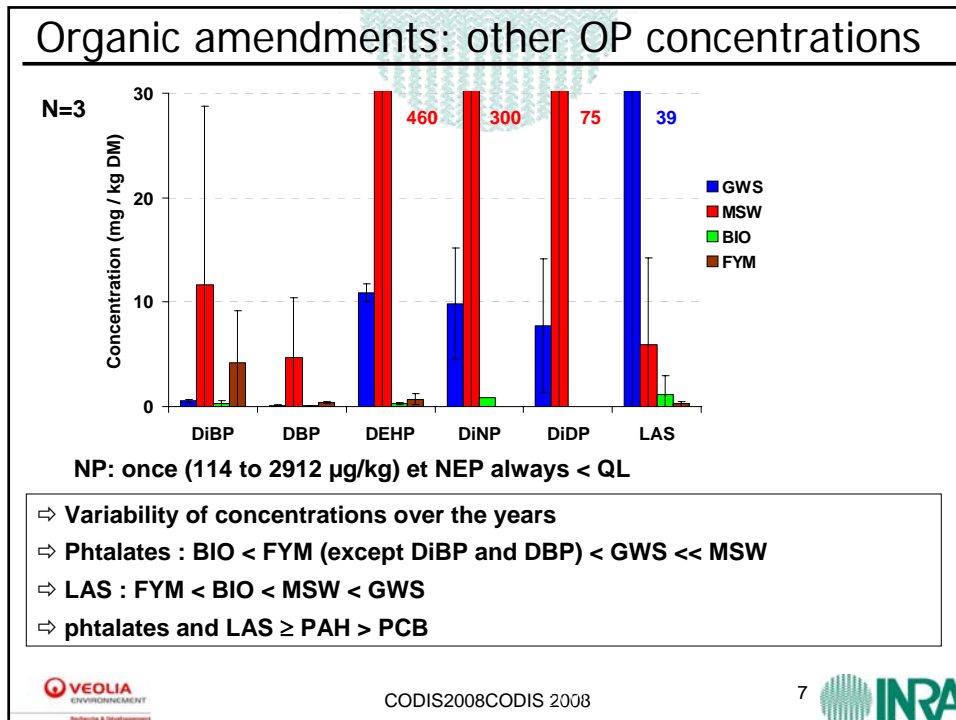
**PAHs**

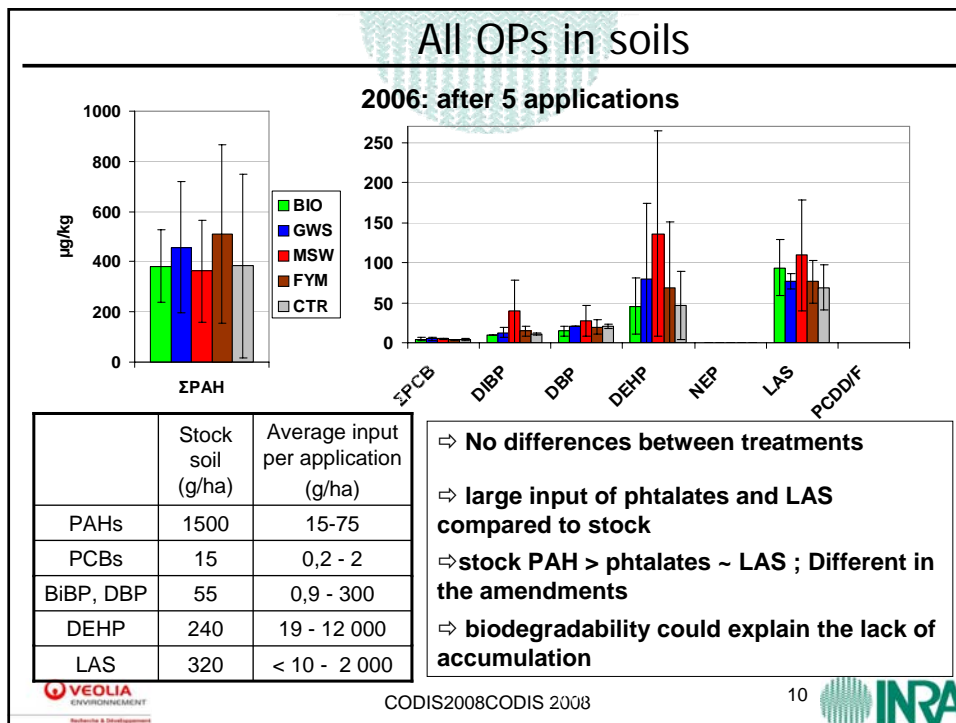
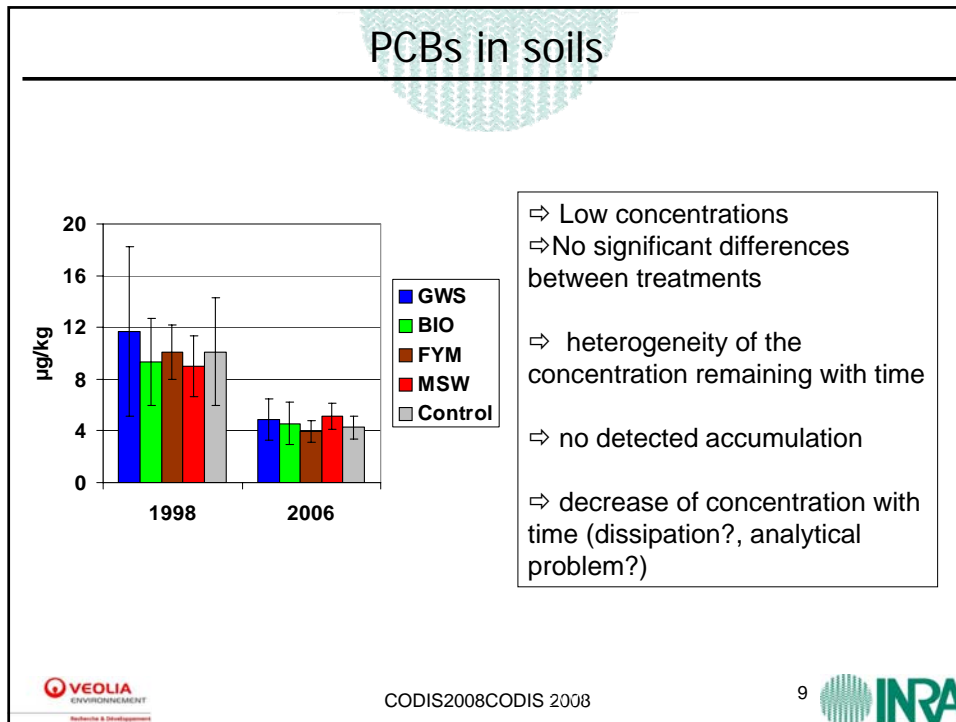
**PCBs**

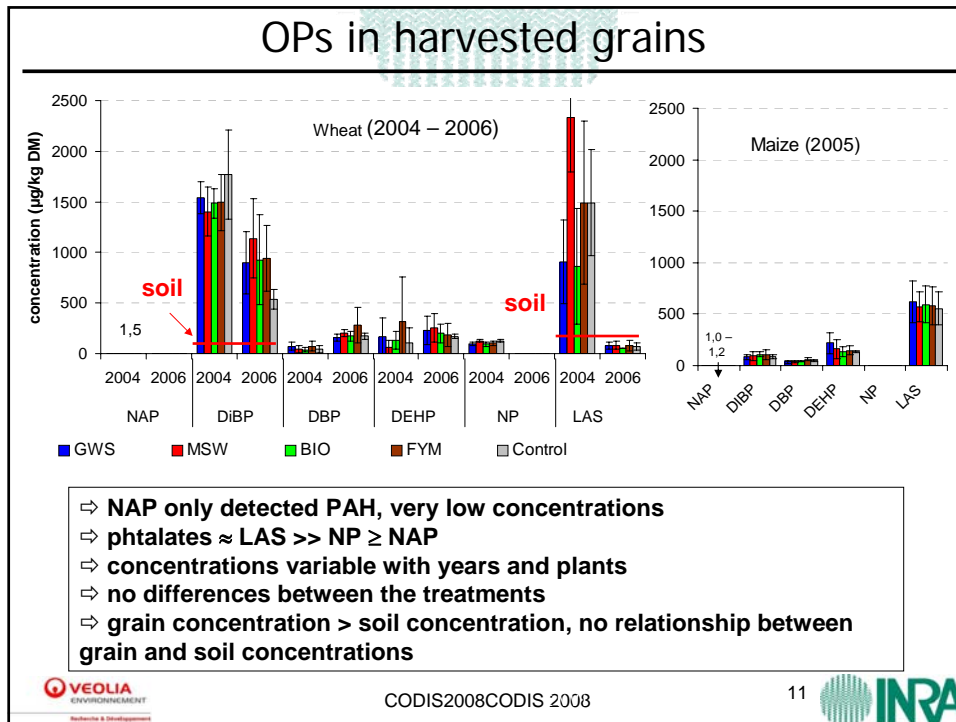
⇒ All organic amendments agreed the standards

PAHs: FYM < MSW < GWS < BIO  
PCBs: FYM < BIO < GWS < MSW

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### Conclusion, future research

- ⇒ **No visible impact of amendements on soils**  
 although OP input with amendements sometimes large compared to soil stock
- ⇒ No relationship between OP concentrations in soils and amendements
  - PAH – PCB : large heterogeneity in soil concentration
  - phtalates – LAS : Biodegradation in soil
- ⇒ **No detected impact of amendements on crops**  
**and no relation between OP concentration in grain and soil**
- ⇒ **Origin of OPs in grains?**
- ⇒ **Analysis of other sources of possible input of OPs**
  - pesticides, fertilizer
  - atmospheric deposition: dry and wet
- ⇒ **To study transfer of OPs from soil to grains in controlled conditions: actually undergoing**

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