

# CleanAtlantic

## Behaviour, fate and impact of cigarette butts in the marine environment

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# The cigarette butt problem!



- A perception problem: *Some smokers felt they had permission to litter, because cigarette butts were not 'viewed as causing significant harm to the environment'* (Smith and Novotny, 2010)
- A quantity problem: estimation of 4,5 billion butts deposited in the environment each year (Novotny and Zhao, 1999)
- A pollutant problem: filter are made to retain toxicants (Marcilla et al, 2012)
- A plastic problem: Cellulose acetate is a non-biodegradable polymer (Puls et al, 2011)
- A beach problem: butts reach high amount in some beaches  
In France: between 0 and 10,8% of total beach litter (2017, OSPAR/MSFD monitoring)

A MARINE ENVIRONMENT PROBLEM!



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# Butts in the marine environment: the unknowns!

How do butts behave in seawater?

At what speed do they degrade on a beach?

At what speed do they degrade in seawater?

Do they release contaminants in seawater?

Do they release contaminants in sand?

How are they toxic to marine organisms?



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# CleanAtlantic and cigarette butts (2017-2020)

Objective: Get new knowledge on cigarette butts behaviour, fate and impact in the marine environment

- 1) Study of butts behaviour and degradation
- 2) Study of butts contamination
- 3) Study of butts toxicity to marine organisms



⇒ 1 scientific report  
⇒ 1 recommendation report

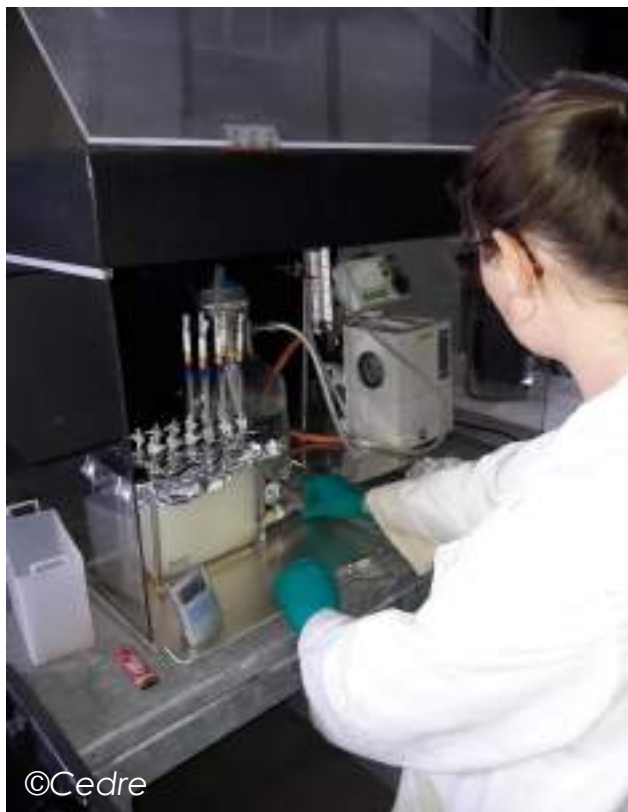
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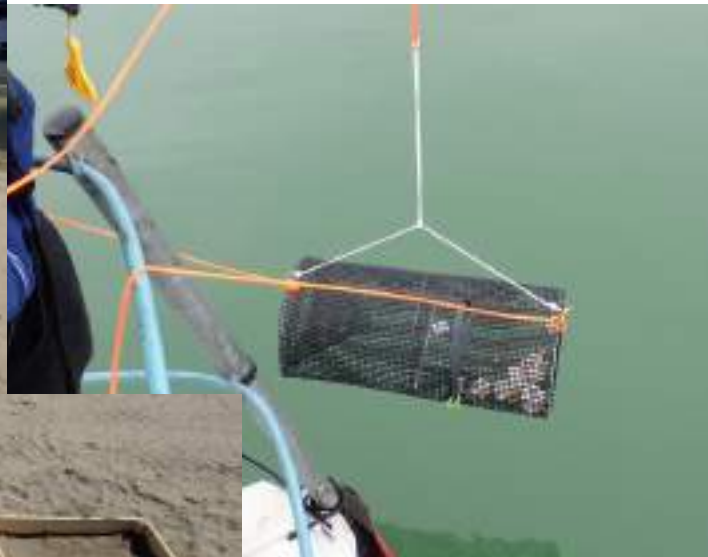
## « Homemade » cigarette butts





# Study of behaviour and degradation

- How do butts behave in seawater?
- At what speed do they degrade in the marine environment?

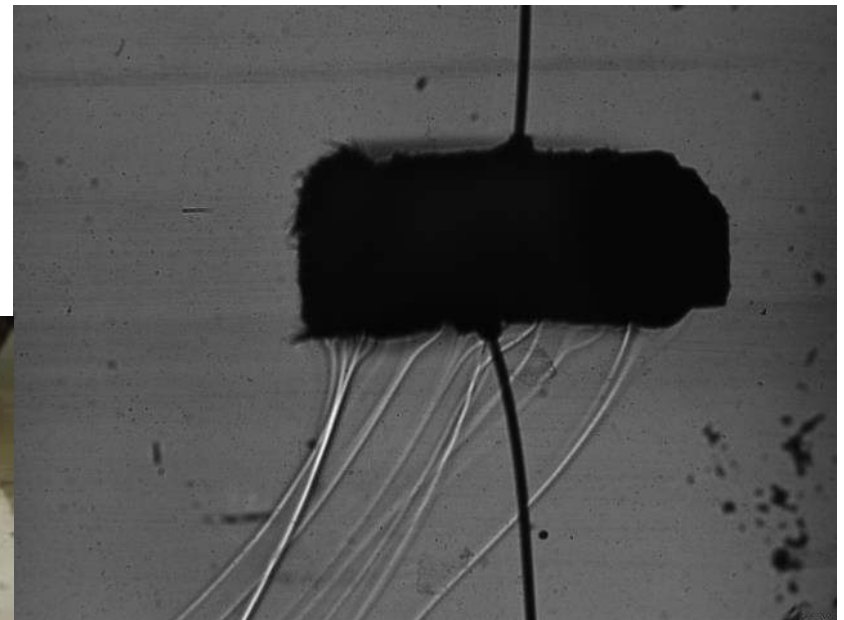


**Next step: field tests**



# Study of butts contamination

- Do butts release contaminant in the marine environment?
- If yes, at what speed?



**Next step: kinetic studies**



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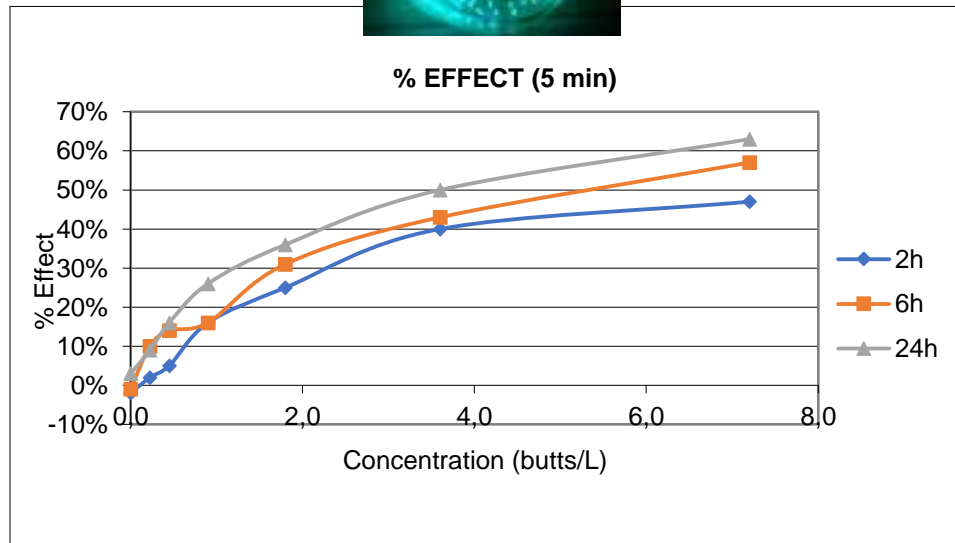
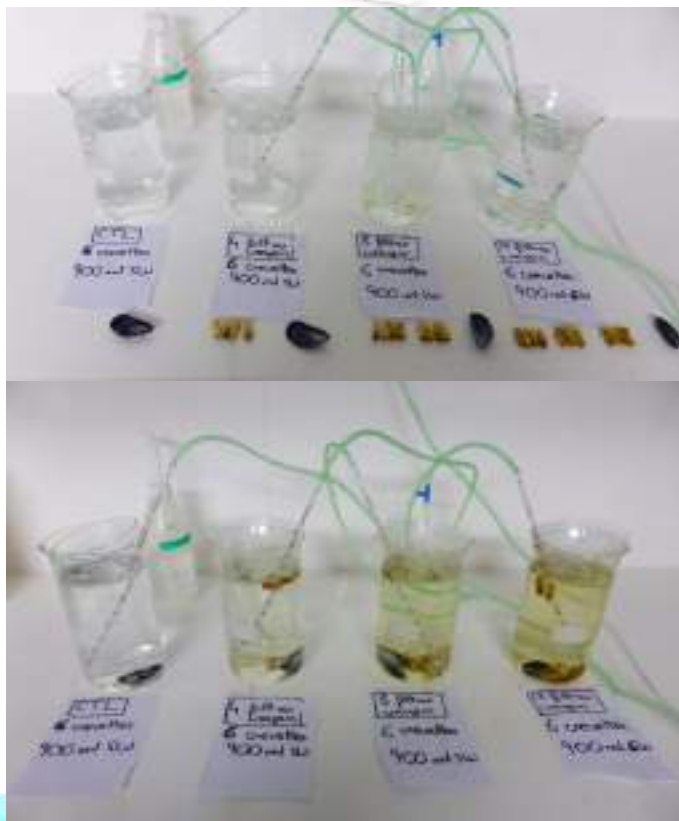


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# Study of butts toxicity



EC50 (butts/L)	5 min
Leachate 2h	<b>7,36</b>
Leachate 6h	<b>5,20</b>
Leachate 24h	<b>3,92</b>

**Next step: tests on oyster and fish**



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# Responses in 2020!

## Thank you for your attention !

