

Environment friendly response: cleaning  
without damaging, restoring adequately,  
Erika examples

*Loïc Kerambrun*

*Cedre*

response & environment  
- generalities -

## Two notions and one concept

- self-cleaning

sea and weather agents may clean the pollution within a short or a long term

- potential impact of the response

Clean up techniques may have adverse ecological effects, sometimes greater than the oil impact.

Ø Do nothing ? How clean is clean ?

# Choice criteria

- Pollution/pollutant (persistence)
- Sites
  - type of shores (substrate, exposure)
  - shoreline uses and fonctions
  - ecological sensitivity
- Seasons
- Techniques
  - adapted techniques
  - potential impacts
  - pro & cons : action / no action
- *Cost (reasonability)*

Response is based on criteria not exclusively ecological but also economical  
... sometimes with some others

Erika example :

fuel toxicity and public health  
... Or to prove that beaches were safe and will remain it

Erika

- environmental response effects -

# *Which impacts? Origin?*

## Operations

## potential effects

- access
  - worksite implementation
  - traffic
  - waste storage
  
  - sediment removal
  - high pressure cleaning
- Ø soil and vegetation damages / oil transfert
- Ø sediment shortage / erosion- dunes damage
- Ø flora removal / rock bursting / oil transfert



## Access

- soil and vegetation damages
- pollution transfert





# Worksites implementation

- damages on soils and vegetation
- pollution transfert







# Traffic

- damages on soils and vegetation
- pollution transfert



# Waste storage: impacts on soil and vegetation & pollution transfert





# Removal of sediment : sediment shortage / erosion / impacts on dune



Collecte manuelle inorganisée



Sable très peu pollué / cribleuse



Retrait temporaire de galets pour lavage



Sable noir anoxique très peu pollué / engin de TP

# High pressure / Hot water cleaning :

- vegetation removal
- rock blasting





# Erika : response damages / Synopsis

- The environmental damages, previously mentioned, were not systematically done, but only restricted in certain sites
- certain spectacular effects hauled through natural ways (plants, for example) due to favorable weather conditions during 2001 but also to some species with good regrowth capacity and strategy (settling species in white dune for example)



# Erika : response damages / Synopsis

- In some places, damages were relatively important, but only in restricted sites (sediment removal for example)
  - 200 000 t of collected polluted waste and fuel  
(fuel, pebbles, sands, mud, soil, boulders, seaweeds, geotextile sheet, others debris, water...)
- All in all, damages are limited considering the duration and the extend of the response
  - more than 800 worksites, along about 400 km of shoreline
  - clean-up operations during two and half years (about 400.000 man/day)

## Erika

- measures taken for limiting the adverse effects of oil spill response on the shoreline -

## Erika spill clean-up : aims

- To clean the non visible sources of oil (re)contamination
- to promote the restauration of natural wild sites
- to limit the potential adverse effects of the clean-up techniques



# To clean the non visible sources of oil (re)contamination

Submerged oil



Cliffs  
and difficult-to-  
accesss coves



Natural Wild sites : bird protected areas (small islands)

to promote the restoration of natural sensitive sites



**Botanical worksites**

**putting out of reach**





# Limiting the removal of sediments out of the beach (1)



Surf  
washing

After a temporary storage at high level  
on the beach



## Limiting the removal of sediments out of the beach (2)



Sand screening

Pebbles washing



# Limiting adverse effects of the traffic



- Quad (low-pressure tyres)
- ‘ Piste ’ geotextile
- pedestrian canalization





# Limiting the pollution transfert



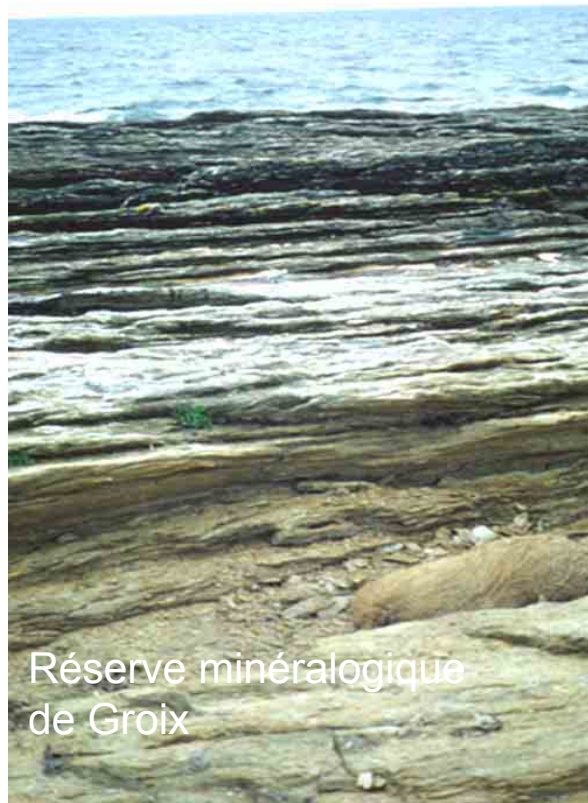
anti-effluent spraying protection (sheets)

crew decontamination



# Limiting potential effects of HP/HW washing

- no washing product
- use of low pressure - hot water



- adjusting pressure / rock hardness



- Effluents recovery



Lavage ' chirurgical ' et protection

- friendly washing of lichen areas



# Limiting impacts on the vegetation

## Worksites implementation

- defining the exact location (through botanical criteria)
- prevention of degradations
- traffic canalization





## ERIKA - a specific organization

- a regional (department) environmental committee
- experts (biologist, botanist, morphologist)
- specifications (technical and environmental recommendations )
- botanical worksite management (specific short-term jobs - Polmar)

ERIKA

- environmental restoration -

# Environnemental Restauration : Erika Synopsis

- Available funds (govt : CIADT) but only a few projets because too few damaged sites
- some operations integrated within wide programs (public funds: Ministry of the Environment / CIADT, Regions) :  
= environmental restauration? Or planning project ?

# ERIKA : a few isolated operations / local initiatives



Pose de filets de chanvre



replantation de dunes (ONF)

## Vegetation

- tests (Belle-Ile, Hoedic)
- replantation (ONF)

sediment refilling



Recharge en sédiments

## ERIKA : Waste storage sites restauration

- inventory (govt. DDE)
- restauration (TFE) via specialized companies
  - assessment and diagnostics
  - operations (removal, evacuation and refilling)
  - replantation (on one site)
- control (govt. DRIRE)

# ERIKA : vegetation restauration

- To restaure without knowledge... or to let the natural hauling.
  - Ø to carry out first : an inventory, a diagnostic, an assesment of the available techniques
- *(in progress) evaluation tests of restauration techniques*
  - Cedre (+ Géosystèmes CNRS-Brest / CCBI )
  - fundings : Min. of the Environnement / CIADT, Fondation d'entreprise TFE pour la biodiversité et la mer



Erika : clean-up & environment  
- facts et lessons -

## myth 1 : natural cleaning efficiency

- Natural cleaning is not always efficient enough





## myth 2 : certain techniques would systematically have adverse effects

- certain techniques have sometimes bad reputation,
  - HP washing
  - sand screening devices (durind Erika)
- but often badly sounded : to be criticized only when not adapted or implemented in a wrong manner

*do not condemn a technique but only the bad user or the bad adviser*

- some facts are badly interpreted

*do not systematically interpret any shoreline impact (erosion) or any other phenomena (seaweeds on rocks) as an evidence of an impact of oil spill response operations*

- Some usual local practices revealed and exacerbated during Erika
  - sediment removal
  - sand screening machines

*Ø more information towards the local communities*

- *destruction of the embryonic dune*
- *removal of the seaweeds and natural jettison*
- *exaggerated removal of sand (badly sorted)*

- Heightening of the local actors to the environment during Erika
  - elected representatives / technical services / Gvt agents
  - oil spill response crews



## *Are these impacts avoidable?*

- Adverse effects done during the early moments (rush)
  - Ø unavoidable? or difficult to control
    - access / storage / transfert of oil / sediment removal
- continuous localized impacts
  - (bad practice + re-contamination)
  - Ø can be controlled
    - cleaning - screening / sand removal, other impacts

*Why early recommendations sent everywhere, were not systematically taken into account?*

- Environmental specifications sent at the same time in every CC
- ‘ loss of info ’ : info ‘buried ’ because not always relevant everywhere at that time (for example, in CC that did not ask for such kind of info because they were not yet exposed to the concerned item)
- ‘ loss of memory ’ due to crew replacement

*Ø to put in place a complementary scheme*

*- Equipe Pilote d 'Intervention et de Formation (Cedre)*

*- with an external support (scientists + nature associations)*

*Ø to promote the Web practise*

## *Why did impacts occur while experts were on spot?*

- Not listened?
- Not numerous enough?
- Not present at the right moment or at the right place?
- Mainly due to the fact that attention was too much focalized on the more difficult worksites : some sites were less controlled than other

*Ø to control every worksite, even those looking ' easy ' or ' run in '*

*Ø to train operators*

# Conclusion

*Another myth :*

*« no lesson learnt from Amoco Cadiz »*

***After the Amoco Cadiz***

- evaluation of the potential impact of techniques (*HPHW, dispersants, washing products, saltmarsh, ...*)
- learnings from other oil spills (clean-up, storage)
  - Ø *a better assessment of the techniques and of their limits*
  - Ø *environmental recommendations*

***During Erika***

- organization
  - environmental committee
  - environmental experts
  - ecological specifications
- techniques
  - environmental aspects
- prevention and restoration measures

*... The next one? Better prepared? Ready?*

- It will not be the same as during Erika
  - improvement of the knowledge and know-how
    - ecological survey Erika / initial inventory of the environment
    - return of experience / training / guides
  - planned implementation of the environmental experts
    - preparation (Polmar planning)
    - response (operational net)
      - availability of ‘independent?’ experts
- but the pollution and its context obviously will also be different...