

**Evaluation de l'impact des pollutions
accidentelles sur le milieu marin benthique
Brest, 13-14 Octobre 2005**

**Management of Oil Spills
Impact Assessment Programs
Experience and Lessons learnt
in France**

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content

About the Ecological impact monitoring programmes (EIMP)

- Setting up (launching, funding, duration), management structure, main results

An analysis of two accidents :

- *Amoco Cadiz* (March 1978) and *Erika* (December 1999)

↳ and *The Next One?*

EIMP setting up : *Amoco Cadiz*

EIMP = immediately felt as highly essential both by :

- **the scientists**

Huge mobilisation : survey and sampling campaign in the early beginning carried out by the University of Brest

- **the national authorities**

17 mars (=J1) : the ministry in charge of the environment (MoE) entrusts the *CNEXO* to define and co-ordinate a national programme

- **...and by the polluter**

AMOCO funds *NOAA* for a complementary French-US programme

EIMP setting up : *Erika*

Slower than during the Amoco Cadiz response:

↳ a late EIMP launching in December 2000 (T+ 1 year)

- The **scientists** are less mobilised

- Availability constraints;
- Ask the authorities for organising and funding a program ; studies proposals;

- The **authorities** are less spontaneous

The first decision is taken through an inter-ministerial commission (*CIADT-28th Feb.2000 / T+ 2.5 months*) that decides :

- To create « *a scientific network for monitoring the ecological and ecotoxicological impacts of the black tide* »
- To reinforce the existing MoE-funded programmes (« *Lit 'eau* » coastal sustainable management)

EIMP management structure: *Amoco Cadiz*

- Who defined the programme? select the projects?
 - *CNEXO* coordinating a scientific committee (Universities Brest, Paris + CNRS + Museum d'Histoire Naturelle, Paris)
- Articulation between CNEXO programme and NOAA-CNEXO programme
 - *CNEXO* and NOAA + EPA

EIMP management structure : *Erika*

- coordination : *MoE*
 - An open call for proposals :
 - Prescriptions written by a WG (DG of MoE + *DIREn* + *IFEN*)
- structure
 - A permanent secretary
 - MoE (+ ministries in charge of Health, of Public Works)
 - selection of the projects ; implementation of the programme
 - A scientific board
 - French and foreign experts
 - Validation of the scientific architecture ; results quality
 - A scientific and technical secretary
 - *Ineris* and *Ifremer* : animation
 - Administrative, financial and scientific follow up ; valorisation
 - A national steering committee
 - Ministries concerned, local collectivities, NGOs
 - Give notice of programme orientations and strategies

Synthesis (1) : *Amoco Cadiz*

- Funding

- 12 MF : 4 MF from MoE + 2 M\$ (8 MF) from *Amoco* oil company
- Research Organisations involved
 - France : 13 (8.5 MF)
 - USA : 8 (3.5 MF)
- > 40 projects founded

- Duration

- 3 years (1978-1981)
- beyond 1981(>1984): some studies carry on through another programme (« *the Ecological Watch of the Brittany Coasts* »), launched and funded by MoE in the wake of the *Amoco Cadiz* Oil spill and coordinated by CNEXO

- Outputs : swift

- 2 CNEXO conferences (T+3 months et T+30 months)
- 2 ecological synopsis (T+1 year et 20 months)
- 1 CNEXO / NOAA seminar (1981)
- [+ 1 conference *UVLOE / CE / Town of Brest* (1979)]
- + 1 « *Amoco Cadiz 20 years later* » conferences / Town of Brest and Cedre (1998)

Synthesis (1) : *Erika*

- Funding / duration
 - 4.6 M€ / 3 years : monitoring of biota and species (DIREn) :
 - 4.6 M€ / 5 years : ecological and ecotoxicological impacts (Central admin.)
- 38 projects funded
 - 30 in « programme suivi *Erika* »
 - 7 / chemical monitoring (water, sediment, organisms)
 - 7 / impacts on birds and mammals
 - 15 / impacts on marine fauna and on marine and shoreline flora
 - 1 / impacts on shoreline morphology (erosion)
 - 8 in « programme *Lit'eau Erika* » (*methods and tools for monitoring*)
 - bio-degradation, effects on bivalves eco-physiology et pathology
- Outputs :
 - 2 seminars : Nov. 2001 (T+2 years) et Nov. 2003 (T+4 years)
 - publication : (>T+ 5 years)
 - Seminar proceedings in « *Aquatic Living Resources* » (end 2004)
 - Synthesis of the results in « *La Documentation Française* » (end 2005?)
 - An itinerant exhibition (fin 2004 et 2005)
 - A web site : www.suivi-erika.info

Synthesis (2) : *Amoco Cadiz*

- **main results**

the understanding of several processes :

- successive phases of an ecological impact and of the recovery
- large variety of impacts (inter and intra-communities) in terms of sensitivity, self cleaning, detoxification...
- ...

- **tools**

- Sensitivity index (from *Environmental Sensitivity Index*)
- Biotic index (disturbance)
- Mortality index (*BigHorn index*)

- **lacks**

- Monitoring of the pollutant distribution in the environment (>air) and of its degradation
- Sanitary monitoring (human health)
- Pre-spill data

EIMP content : *Erika*

4 areas

- Spatio-temporal distribution of the chemical pollutants in the biota
 - PAHs, Ni et V
 - in water, in sediments, in living organisms
- Transformation and bio-availability of the contaminants
 - degradation monitoring (photochemical, microbiological, ...) and impact of its metabolites
- Impacts (ecological and ecotoxicological) on living organisms
 - species (notably via bio-markers) and communities (benthic and pelagic)
 - supra-, inter- and infratidal areas
 - Marine mammals and birds
- Geomorphological evolution of the shoreline

Synthesis* (2) : *Erika*

main results

(* from the Erika EIMP Scientific Board)

Validation of **new biomarkers** now integrated in existing monitoring network (or will be in next monitoring network)

Establishment of **new baseline reference data**

- two observation network (inventories) initiated by *DIREn Bretagne* :
 - shoreline terrestrial vegetation (*Conservatoire Botanique National de Brest*)
 - benthic communities (*ReBent / Ifremer Brest*)
(but what about their funding beyond 2004 or 2007?)
- a monitoring network : level of oil contamination of salt-producing marsh (Guérande)

remark

for a same item, there exists methods and indicators often different and not easily comparable

recommendation

- to couple **research and observation/monitoring** (aiming at predictive models)
- to search for **ecological and ecotoxicological indicators** usable for shoreline watch/monitoring

And the *Prestige*?

MoE decided :

- not to launch a new EIMP : to let open « *the Erika monitoring programme* » to any *Prestige monitoring study* proposals (but none or only one submission)
- but to give priority to :
 - perennial survey/monitoring networks (+ reinforcement of the existing ones) enabling :
 - *pre-spill baseline reference data* and *post-spill ecological conditions*
 - [+ answer to other requests of monitoring network : EU-WFD +GMES]
 - marine benthic communities
 - physico-chemical quality of marine biota
 - littoral terrestrial flora and vegetation
 - areas of interest for wintering of marine birds
 - research programme on the “*economical assessment of ecological damages*”

And *The Next One?*

- funding?
 - probably, the one that should have been already used (re-imburement)
- management structure?
 - probably, the one that has been already set up
- what and how?
 - chemical, ecotoxicological (and ecological?); biomarkers, nanotechnology, models, ...
- who?
 - public and/or private sector, ONGs?
 - in a regional, national, European frame?
- and about the economical assessment of ecological damages?
 - what will it be based on?
 - Costs evaluation of some well-targeted species : birds, ... (criteria?)
 - A real ecological losses account? (who will have the knowledge? Who will be there?)
 - will it be necessary?
 - In the case of regulation/law stating fixed fines arbitrary scheduled