





THE ERIKA OIL SPILL : OILED VEGETATION CLEANUP Mr Franck Laruelle Cedre - Rue Alain Colas – BP 20413 - 29604 BREST Cedex <u>franck.laruelle@le-cedre.fr</u> Secondary authors : Mrs Florence Poncet and Mr Frédéric Tintilier

ABSTRACT :

The tanker Erika broke up and sank off the coast of Brittany on December the 12th, 1999, leading to the spill of 20,000 tons of bunker C fuel. This oil had been drifting and weathering at sea for 12 days, through severe sea state conditions, leading to the division and scattering of the slicks and to an extreme emulsification of the fuel before it eventually reached the shore. At the beginning of the spill, due to a combination of storms and spring tides, the oil was projected high along the coastline, beyond the normal sea-influenced tidal zone, resulting in the significant pollution of the terrestrial dunes and cliffs vegetation.

Following the field assessment of *Cedre* and of the Environmental Evaluation Group's botanists gathered by the *Diren* (Regional Environmental Agency), the organisation of botanical work sites rapidly appeared to be necessary on sensitive areas. The objectives of the vegetation cleanup was the removal of oil accumulations which could be mobilised or which could dry the soil, but to keep the soils, seeds and root systems to allow a spontaneous re-growth of the native vegetation.

POLMAR human resources, mainly fire fighters and the army, were engaged in the bulk cleanup and then in the high pressure cleanup. Unlike vegetalized intertidal areas, fine cleanup of supra-tidal vegetation was not a priority and was neither part of their mission nor inclination. Thus, the cleanup of oiled vegetation was achieved in different ways depending on the Response Centre and the intensity of the pollution.

In Vendée, the massive slicks that polluted intertidal marshes were extracted by the firemen and the military since it was part of bulk cleanup. These operations were closely managed and followed by the Conservatoire Botanique National de Brest (Brest National Botanical Conservatoire). Later, final cleanup of residual oil was



locally achieved by the short term staff state-contracted and by the shoreline workers of the Fédération Services Littoral, a shoreline maintenance association.

In Loire-Atlantique, expert-supervised soldiers cleaned up the intertidal vegetation impacted by slicks. Since the supra littoral vegetation was largely impacted. The authority contracted the Fédération Services Littoral, which federate several shoreline cleanup associations. These teams, as others, were supervised by the experts of *Cedre* and *Diren* who gave recommendations for the cleanup.

In Morbihan, beach, rocky and vegetation cleanup was achieved by the same operators. *Cedre* an *Diren* experts made state and private operators aware of the sensitivity of the vegetation. Moreover, TotalFinaElf contracted a botanist to relay the recommendations from the experts and to assist operators in the management of the response on the Islands. The botanist made recommendations to set up work sites regarding the sensitivity of the surrounding vegetal communities. In this context, specialised teams from Le Floch Dépollution were specifically attached to the vegetation cleanup.

In Finistère, botanical cleanup was achieved by specialised teams supervised by TotalFinaElf-contracted botanists who relayed the recommendations given by the Conservatoire Botanique National de Brest (Brest National Botanical Conservatoire) on behalf of the *Diren* and by the experts of *Cedre*.

Cleanup techniques depended on the pollution degree and the species sensitivity. Soft techniques were used, since the objectives of the cleanup were the removal of the oil and the conservation of the auto-restoration capacity of the native vegetation. These techniques, mainly manual, consisted in the use of gardening tools to cut the oiled parts of the plants, to remove accumulations at the foot of the plants, to mow plant aerial parts in order to reach the oil, to manual sieve in dunes and to protect cliff plants (chasmophyts) during the high pressure cleanup of adjacent rocky areas.

The organisation of botanical work sites is a notable originality in the context of oil spill response. The involvement of specialised operators in the cleanup operations and the involvement of botanists within the shoreline response centres and/or in the field to prevent cleanup operation damages is an innovation in the French Polmar plan. Such an innovation can be related on one hand to the fact that the pollution significantly reached exceptionally elevated levels, and on the other hand to the increasing consideration of the environmental issues taken into account during oil spills.





Cedre

Erika Oil Spill

- 19,000 tons of heavy fuel
 12 days of weathering at sea 30,000 to 40,000 tons of emulsion
- Bad sea and weather conditions
- Spring tides











List of rare / threatened / protected Atlantic shoreline species	
Atriplex littoralis	Linaria arenaria
Crambe maritima	Omphalodes littoralis
Euphorbia peplis	Pancratium maritimum
Lathyrus maritimus	Vincetoxicum hirundinaria
Polygonum maritimum	Limonium lychnidifolium
Polygonum oxyspermum ssp. raii	Asplenium marinum
Eryngium maritimum	Apium graveolens
Medicago marina	Daucus carota ssp. gadeceaui
Othanthus maritimus	Limonium occidentale
Pancratium maritimum	Limonium ovalifolium ssp. gallicum
Asparagus officinalis ssp. prostratus	Rumex rupestris
Dianthus gallicus	Triglochin palustris
Galium neglectum	Erica vagans

26 species are vulnerable within the impacted area



- •Field assessment by Cedre and Diren experts
- •No systematic cleanup
- •Necessity of specific botanical worksites supervised by botanists
- •Establishment of common guidelines (Diren)

Oiled vegetation cleanup criteria:

Significant and accessible pollution Patrimonial interest of plant species and communities Problematical pollution in terms of socio-economic use Relative impact of pollution and cleanup



























Conclusion

- Originality of vegetation cleanup
- To date, the post cleanup surveys show that cleaned up vegetalized areas present a good capacity of recovery
- The involvement of supervising botanists and botanical cleanup teams is an innovation in the POLMAR Plan, related to:
 - the impact on supratidal vegetalized areas
 - the increasing consideration given to ecological sensitivity