Surveillance and R&D after pollution

Session report

Shoichi Hara - Michel Girin

Technical lessons learnt from the Erika and other oil spills

SYNTHESIS - general

The 11 highly diverse presentations of the session could be grouped into 3 broad categories :

- 4 presentations on bio-chemical aspects (chemical evolution of oil, shellfish contamination by oil and heavy metals, use of bio-indexes)
- 4 presentations on technological research (for oil spill prevention / response / monitoring)
- 3 presentation on response planning and lessons learnt (formulation and implementation of plans, replay of decision aids)

Those 11 presentations were complemented by a guest lecture on research management in relation with a major oil spill.

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SYNTHESIS - Bio-chemical aspects

HAPs print of the Erika fuel and HAP evolution in fuel along weathering, in water, in sediment and in shellfish were confirmed as essential components for assessment of the pollution added by the spill to the baseline pollution.

Typical HAPs post oil spill patterns were observed on shellfish, with maximum concentrations in flesh 1-2 months after spill, lowering during summer, new, lower increase due to remobilization in subsequent winter months, and return close to baseline level in second summer.

Nickel levels in shellfish didn't show evident spill related increase but Vanadium did, with a 4 months delay compared to the HAPs peak. Although explanations for the delay remain to be found, Vanadium, when significantly present in spilled oil, can be used as an index of oil absorption.

Shellfish Enzymes concerned with the degradation of PAHs showed evident increase in highly polluted areas over the 4 months following the spill. Based on the findings, a 5 markers index was proposed as a quick way to assess the stress faced by a shellfish population face with an oil pollution.

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SYNTHESIS - Technological research

The work programme and results achieved by the emergency towing group set in the aftermath of the Nakhodka incident in Japan were described. They clearly showed the interest of using real incidents as models for scenarios to improve through modelling and experimentation both towing hardware and software.

Various technological projects formulated in the aftermath of the Erika incident in France were described. They included the design of a disposable surface oil trawl net and tests of a small scale model, a gravity recovery system for oil seeping from a wreck, containment and automated sunken cargo recovery systems, a low-cost high seas recovery barge, a small coastal recovery barge.

A Japan-France co-operative project on submerged oil slick monitoring was presented. The Japanese component, started in the aftermath of the Nakhodka spill, concerned the development of a specialised LIDAR for aerial use in subsurface slicks monitoring. The French component, started in the aftermath of the Erika spill, was designed to complement the other, with development of tools and techniques for monitoring oil buried in the sea bottom.

Wreck and seafloor monitoring by a newly-built prototype sonar for Navy use was presented, with capacity to observe up to anchors and chains. Results obtained on the wreck or the Erika in spring were shown.

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SYNTHESIS - Response planning and lessons learnt

Up to date port emergency response planning principles, for oil, other bulk products and container incidents, were described. The constraints faced by response managers and operators were highlighted, with particular reference to the fact that they must be prepared to properly implement the plan under considerable stress.

The replay of the Erika incident with simulations of 4 apparently more favourable options in terms of impacted coastline showed that, in the prevailing unstable meteorological conditions, the authorities could not have known at the time of decision what was to be the result of their decision. In general, options in which the ship moved closer to the coast resulted in faster coastal pollution, on a reduced length of coastline. Options in which the ship moved further resulted in a potentially increased length of coastline, but with more time for recovery at sea.

The TotalFinaElf Company dramatically revised its marine pollution response strategy and organisation, working on 3 complementary aspects : prevention, intervention and crisis management. Prevention centred on stronger control and renewal of chartered fleet. Intervention, previously centred on technical response, was widened to non-technical matters. A fully new internal crisis management organisation was created. The basic principle of that organisation was to leave incident management to technical departments, while the consequences management would be handled by a crisis management committee. Prevention and response preparedness were improved in parallel, considering that no prevention can guarantee 100% success.

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SYNTHESIS - Guest lecture

The guest lecture highlighted the main aspects of research management in relation with a major oil spill : know-how for emergency advice, follow-up capacity, research to support new regulations, waste processing and destination (including impact and surveillance), social and economic studies, and more generally inter-relation between research and catastrophes, both in terms of research generated by catastrophes and in terms of research results of importance for prevention/prediction of accidents. Implementation of those tasks requires a service-oriented policy at Institute level, including specific means and procedures. Availability of scientific expertise must be pre-planned. General organisation of follow-up actions and further research programmes must be pre-set.

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DISCUSSION AND RECOMMENDATIONS

Although highly diverse, the presentations covered only very limited samples of the R&D related with oil spills. They were not fully representative of the overall diversity of the programmes underway (as an example, no research on inter-tidal populations or on social aspects were presented). But those samples generated many comments and questions of the audiences. A number of subjects of potential interest for recommendations were discussed. They included, among others :

- improved response planning and procedures,

- better dissemination of experience from past spills,

- multiplication of co-operative research

- long term financing of follow-up surveys.

But the rapporteur and chairman noted one point of particular importance in the presentations. While some made clear references to similar research undertaken in the aftermath of recent incidents in other countries, or concerned joint projects between partners from different countries, other presentations, particularly on post spill surveys made little reference to results achieved and standards used in incidents abroad. **As a consequence, it is recommended that exchange of information on data acquired in spill surveys and used for decision-making would be strengthened in order to better disseminate experience and knowledge acquired by others, and to improve consistency in scientific work and advice.**

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