

## FINAL REPORT

### "Workshop on Oil Spill Mitigation Measures & Harvesting Control of Marine Farming "

#### **A. Framework of the action and objectives**

The workshop titled "*Oil Spill Mitigation Measures and Harvesting Control of Marine Farming*", was materialized as an action under the Priority Field Action III.4 (E) "*Protection of aquaculture*" in the European Community Framework for Co-operation in the field of accidental or deliberate marine pollution and in particular of the 2000 – 2002 rolling plan of actions.

The basic aim of the action was to offer to the objective set by the European Commission, to enhance and supplement Member States' efforts at national, regional and local levels for the protection of the marine environment, the coastline and human health against risks for accidental or deliberate pollution at sea.

The three-day workshop took place in Athens, in February 3 - 5, 2003. A scheduled event, the visit to Ancient Epidavros and SELONDA S.A. fishculture facilities in the same area took place during the second day of the workshop.

The particular objectives, that Environmental Protection Engineering S.A. attempted to achieve were as follows:

1. To promote the exchange of views, knowledge and experience among the participants, in particular on the methods and techniques used to protect marine farming in case of a pollution incident and also to the criteria and approaches for managing production following such events.
  2. To assist in determining similarities and differences on the problems faced to protect mariculture from oil and other harmful substances spills as well as to control the farming activity following a spill, in national and community level.
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3. To promote new ideas and initiatives for future actions and strategies in community level with regard to the protection of aquaculture from risks posed by oil spills.
4. To enhance the co-operation on a european level and raise the awareness through the participation in the workshop among the mariculture operators, government authorities, research institutes and response organizations with respect to the protection of marine farming from oil pollution incidents.

### **B.1 Participation in the Workshop**

Eleven (11) delegates from six (6) European Community member coastal states took part in the workshop.

The number of participants per Member State is presented below and their all contact and professional occupation details are presented in the Annex I of this report.

<b>E.U. Member States</b>	<b>Number of Participants</b>
Belgium	2
Greece	3
Ireland	1
Italy	2
Portugal	1
United Kingdom	2
<i>Total: (6)</i>	<i>(11)</i>

### **B. 2 Lectures and other presentations**

The schedule and the flow of the workshop presented at the Annex II of this Report was implemented as planned. Discussion on the Delphi method results was carried out at the end of the workshop.

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The visit to the coastal production facilities of SELONDA S.A. took place during the second day as scheduled. SELONDA S.A. founded 18 years ago, constitutes a group of companies including hatcheries, on - growing sites and commercial enterprises that emphasizes on quality, effective use of resources and on an integrated approach to the natural process of spawning and feeding of the produced species.



SELONDA A. E. mariculture facilities (Epidavros)

The company offered a guiding tour to its land – based facilities in Epidavros in Korinthiakos Gulf, while it was not possible to visit the offshore facilities due to a

scheduled loading operation of the main supply craft of the facility which was to carry onboard the participants.

During a discussion preceding the tour, Dr. Katerina Lytras responsible of the production control and the laboratory of the facility, presented an oil spill case study that affected the production of the facilities several years ago.

Dr. Lytras outlined the response of the company's personnel to deploy booms against the oil spill caused by an outflow of crude oil from a nearby refinery and the subsequent actions to check the potential uptake of hydrocarbons by the cultivated fish. Data on fish mortalities, changes in the behaviour of fish witnessed, oil

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contamination and clean-up of farming equipment as well as efforts to control the production were also provided.

The names and specialties of the lecturers of the workshop are presented in the following table:

<b>? s. E. Papachristou</b> Representative of the Fisheries General Directorate Ministry of Agriculture, Greece	<b>Dr. E. Papathanasiou</b> Director of Oceanography Institution, National Center for Marine Research, Greece	<b>Dr. E. Cotou</b> Oceanography Institution, National Center for Marine Research, Greece	<b>Dr. M. Alexi</b> Oceanography Institution, National Center for Marine Research, Greece
<b>Mrs. K. Karveli</b> Agrotiki Insurance Greece	<b>Ms.V. Mitropoulou</b> Chemical Engineer, R & D Dept., Environmental Protection Engineering S.A. Greece	<b>Mr. S. Volakis</b> Oceanographer, R & D Dept., Environmental Protection Engineering S.A., Greece	<b>Dr. K. Lytras Mr. D. Pettas</b> SELONDA S.A. Epidavros Production Facility, Greece

### **B.3 Delphi method and workshop results**

A simple questionnaire was developed with the aim to facilitate the exchange of views as well as to capture issues and views that might have been important to be discussed during the workshop. The questionnaire was intended to request views and comments from the experts on issues that objectively are rated as most important for the operational part of marine farming protection in case of an oil spill.

Two sets of questions were incorporated, one with respect to the planning, methods and techniques used to avoid pollution after an oil spill incident and another about the effects of oil on mariculture.

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The National Centre for Marine Research of Greece represented by Dr. E. Papathanassiou, Dr. E. Cotou and Dr. M. Alexi carried out the following tasks:

1. Delivery of two presentations, as described in the attached program, with the aim to convey experience gained and practices used in Greece with regard to chemical analyses and sensory testing methods used in case of oil spills that impact marine farming units.
2. Drawing up of the second part of the questionnaire, related to the above mentioned technical area.

During the time of the preparatory work and following the maritime accident and subsequent oil spill of Prestige off Spain, efforts were made with the assistance of the European Commission and its Civil Protection and Environmental Accidents Unit to have delegates from Spain in the workshop to present the activities of the local authorities and organizations to protect the marine farms that were located in the area of the incident against the oil spill. Since, that was not possible, a brief report of the Prestige oil spill was presented in the workshop, as jointly prepared by a mission of observers organized by the European Commission.

The questions asked, the answers provided and other results produced during the workshop are presented below:

### **B.3.1 Planning, methods and techniques used to avoid pollution following an oil spill**

- *Is there any specific legislative or regulatory instrument that refers to mariculture protection against oil spills in your country?*

All delegates replied that there is no specific legislation dealing with the protection of mariculture from oil spills. However, some kind of technical guidance exists regarding the compatibility of pollution fighting means employed and the identity of economic or social activities of the area in danger.

- *According to your knowledge and experience, please specify any protective or other response measures against spill incidents that mariculture operators are obliged to take, or take at their own initiative in your country.*
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Apart Greece, all the other delegates representing their countries, replied that there are not any mandatory or voluntary measures taken. The delegates from Greece, replied that in accordance with the applicable National Contingency Plan, mariculture operators are obliged to preposition an adequate length of booms and amount of sorbents to protect their facilities in case of a pollution incident in the wider area.

- *Please, refer to oil or other harmful substances spills that occurred in your country and affected mariculture activities during the last three years.*

Reference was made to the M/V Eurobulker spill incident occurred in Greece in 2000 resulting at a heavy fuel oil spill of about 500 cubic meters during which local shellfish farms were threatened but not finally affected.

There were no major oil spills in the UK waters in the last 3 years, while a 60 tons of heavy fuel oil spill happened in Ireland in May 2002 causing temporary suspension of harvesting was mentioned by the Irish delegate.

The delegate from Portugal mentioned and demonstrated during the workshop, that according to the national data base, maintained since 1971, about 0.4 % of the oil spills in Portugese waters have affected mariculture farms.

- *Is the likelihood of an accidental oil spill and its subsequent effects taken into account during the site selection of a mariculture activity in your country?*

Most delegates, (apart those from Belgium where there is no at the moment such an economic activity), responded that the abovementioned likelihood, is not a major selection consideration due to the unpredictable nature of such incidents.

In other cases such as in Ireland normally aquaculture sites are in remote locations away from potential spill sites and industrial areas. Environmental Impact Assessment is the basic requirement in the European Union before an operation licence is granted.

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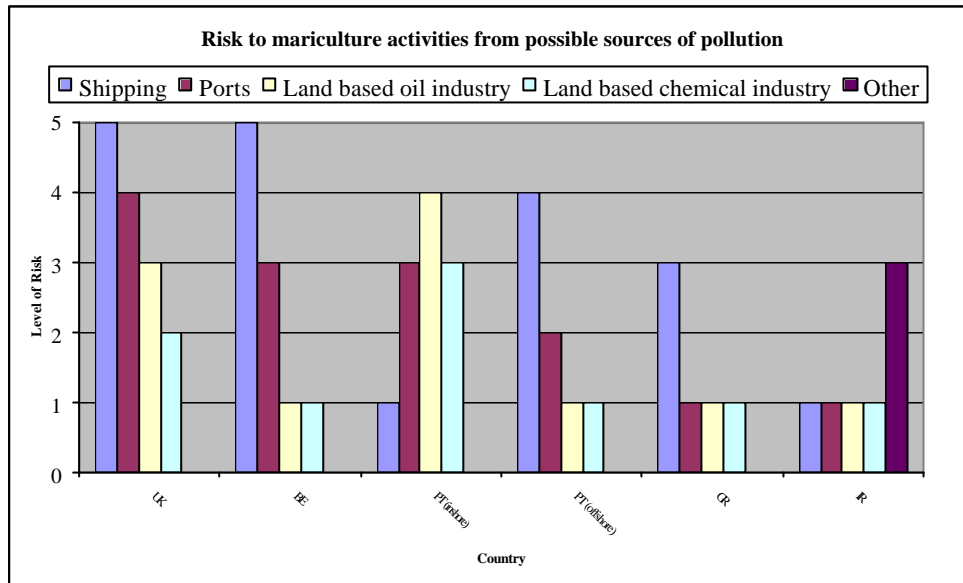
It is worth mentioning, that in UK, following the loss of shellfish stocks caused by the 1996 Sea Empress oil spill, there has been no redevelopment of shellfish farming in suitable areas near the Milford Haven oil terminals.

- *To what extent mariculture areas are reflected in maps or other inventories used for contingency planning purposes?*

All delegates confirmed that mariculture sites are sufficiently reflected either in sensitivity maps of appropriate scale or other inventories developed to provide input in national or local scale contingency plans.

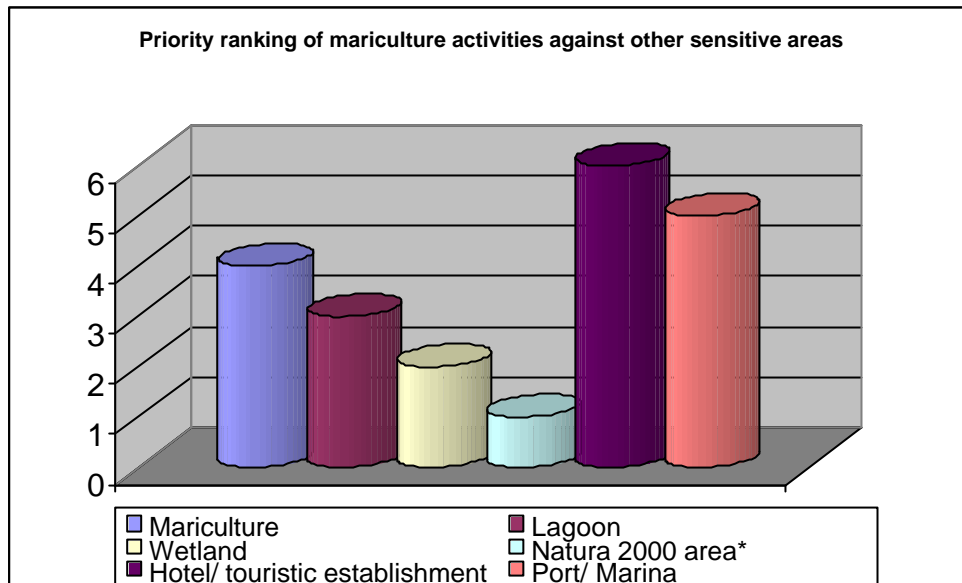
In UK an interactive shared database that provides the geographic position and other details is maintained by CEFAS Fish Health Inspectorate.

- *Rate in terms of the risk to mariculture activities in case of an accident ( indicated as low or no risk, medium and high risk respectively), the following sources of pollution (shipping, ports, land-based industry, land-based chemical industry, others) ?*
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- According to the provisions of the local contingency plans, there is normally a competent authority that decides, upon certain criteria, on the level of priority for protection of mariculture activities, against other environmentally and socioeconomic sensitive areas. Please mention any existing criteria and rank the protection priority.

Almost all delegates supported the view that it's difficult to specify the priority, as it normally depends on a lot of factors such as the historical and economic usage but in any case the responsible authorities assess, in principle, the priorities, in respect of each separate incident in consultation with environmental and other interested parties.



### B.3.2 Effects of oil on mariculture activities

- Have mariculture operators in your country experienced toxicity effects of oil and/or dispersants in their livestock?

Only in UK following the major oil spills of 1996 Sea Empress and 1993 Braer, according to UK delegates, shellfish areas experienced impacts varying from toxicity to taint.

- How well for responding to oil pollution are the mariculture operators in your country?

In countries where there are not any obligations for mariculture operators to allocate equipment to respond to oil spill incidents, the abovementioned level is not particularly good.

- *Are there any specific instructions concerning the procedures that mariculturists have to follow after an oil spill to ascertain quality characteristics of their affected fish before disposal to market?*

It was one of the most important issues discussed during the workshop. In Ireland, mariculture products are tested by local fishery officers for toxicity to ensure public safety and similarly in UK appropriate standards (based on chemical analysis and sensory testing panels) should be met before a fishery is allowed to operate again.

- *How frequent is the appearance of fish characterized by an oil taint in the market of your country?*

The frequency was considered as almost trivial.

- *Do the mariculture operators take a different protective and/or abatement approach according to different cultivated species, eg. do the measures taken differ between e.g. a mussel and a salmon culture?*

It was agreed during the workshop, that any conventional or alternative approach, would depend on the specific circumstances of the incident and the area in danger and certainly the species and the method of cultivation.

It was also mentioned that there is limited experience from previous incidents. Shellfish such as mussels might be harvested before contact with an oil spill and salmon might be moved if possible. An effective booming is a valuable operation to deflect or contain an oil spill.

- *Are chemical dispersants allowed to be used in the proximity of marine farming activities in the event of a spill incident in your country?*

In principle, the application of chemical dispersants is advised to be avoided close to environmentally sensitive areas due to the potential toxicity effects. In almost any of

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the countries represented in the workshop, dispersant application is allowed provided that a permission is given by the responsible authorities.

- *Are there any specific measures that insurance companies require against the pollution risk from oil spills to insure the mariculture operations? In case that an operator takes more measures than those that are absolutely necessary for the insurance company, is there any relevant relief to the cost and other provisions of the insurance?*

It was stated from almost all delegates that although marine farming operators can be insured in the frame of their product quality against loss of stock or tainting effects, it was not clear if they are required to take any specific mitigating actions.

The workshop was warmly welcomed by the representatives of the mariculture operators in Greece, where so far, apart from minor and sporadic cases, there was not such an oil pollution incident capable of causing a strong impact on aquaculture.

However the expansion and the geographical spreading of the sector creates an uncertainty over the response efficiency and the adequacy of measures in local and regional level and also for the management of farming resources during an oil spill.

It was felt by most of the participants that recent oil pollution incidents such as this caused by Prestige indicated that it is necessary a wider knowledge on both conventional and alternative ways of intervention and protection measures for farming activities.

In accordance with the action, documentation produced in the form of a package containing hard copies of the notes and presentations, the final program, and also a copy of the EC Evaluation form was handed to each participant.

Environmental Protection Engineering S.A., the beneficiary of this project, feels that the workshop was successful, achieving the objectives that had been set. The results of the evaluation made by 7 delegates are presented in the Annex III of the Final Report.

Environmental Protection Engineering S.A. would like to thank the European Commission for its trust to approve and co-fund this action under its rolling plan

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2000 – 2002 with the aim to support Member States capabilities in responding to oil  
pollution incidents.



*A photo with the participants taken at the end of the workshop*

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**Annex I**

**List of Participants**

**Annex II**

**Schedule of the Workshop**

**Annex III**

**Evaluation Results**