



**UNDP/GEF PROJECT ENTITLED “REDUCING ENVIRONMENTAL STRESS IN THE
YELLOW SEA LARGE MARINE ECOSYSTEM”**

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English only

**Technical Meeting for the Co-operative Study Cruises
In the Yellow Sea Marine Basin
For the UNDP/GEF Yellow Sea Project
*Qingdao, China, 17-18 October 2005***

**Consideration of the Observation and Sampling Requirements
For the Pollution Component**

As provided by the Regional Working Group on Pollution Component, September, 2005.

1. Background

In the first RWG-P meeting, the members of the RWG-P discussed the collection of data and information for preparation of the TDA and found it necessary for a cooperative cruise in the basin of Yellow Sea, in order to generate a whole Yellow Sea picture on pollution component as the baseline for the implementation of YSLME Project.

In the first RSTP meeting, the experts discussed the objectives of the joint cruise and the proposal of sampling stations. It was noted that the survey would cover the entire Yellow Sea area, but exclude territorial sea areas. The survey is not intended for scientific research, but to fill the gaps of data and information required for the preparation of TDA. The research vessel, ‘Bei Dou,’ belonging to the Yellow Sea Fisheries Research Institute, China, will be used in the survey, and the 4th to 25th January 2006 has been proposed as the first survey period.

Regarding to the number of persons to be on board, It was proposed that 6 persons will be designated to be on board for the first joint survey.

For RWG-P, the main objectives of the joint cruises are:

- (i) Based on the data and information gaps identified by the RWG-P, to provide basin-wide data and information for the Yellow Sea covering all

pollution parameters identified in the 1st working group meeting;

- (ii) The data and information collected by the joint cruise will be used, together with other existing data and information, in the preparation of Transboundary Diagnostic Analysis (TDA), in particular the data and information covering the entire Yellow Sea; and
- (iii) With all the data and information available to the project, to prepare necessary baselines of the environment status at beginning of the project implementation. The baseline information will be used in the later stage as one of the indicators for the evaluation of the project.

The draft plan for joint survey for pollution component was proposed by the Chinese members of RWG-P, and the ideas and information for the planning were exchanged with the Korean members of RWG-P. After commenting and discussing, the plan for pollution component was agreed by RWG-P in general.

2. Parameters and Samples

The parameters and samples in course of joint survey for pollution component of YSLME are proposed as showing in Table 1. The parameters are selected according to the data and information requirements for pollution component resulting from first RWG-P Meeting.

Table 1. Parameters and Samples for Pollution Component on First Joint Survey.

Parameters		layers			Total
		surface	10m	bottom	
Routine parameters	temperature	52	52	52	156
	salinity	52	52	52	156
	pH	52	52	52	156
	transparency	52	52	52	156
	DO	52	52	52	156
	COD	52	52	52	156
	SS	52	52	52	156
	chlorophyll a	52	52	52	156
Nutrients	nitrate	52	52	52	156
	nitrite	52	52	52	156
	ammonium,	52	52	52	156
	phosphate	52	52	52	156
	silicate	52	52	52	156
Organic pollutants	TOC	52	52	52	156
	TPH	52	0	0	52
	PAHs	52	0	52	104
	PCBs	52	0	52	104
	OCPs	52	0	52	104
Heavy metals	Cu	52	0	0	52

	Pb	52	0	0	52
	Zn	52	0	0	52
	Cd	52	0	0	52
	Cr	52	0	0	52
	Hg	52	0	0	52
	As	52	0	0	52

The requirements for sampling are as follows:

- Layers of sampling are proposed as: surface, 10m and bottom.
- For heavy metals and TPH, only surface water samples are collected;
- For PAHs, PCBs, OCPs, only surface and bottom water samples will be collected.

3. Equipment and Methods

The equipment and methods that will be used in this survey are showed in Table 2. It should be noted that participating laboratories, related to the analysis of parameters and/or pollutants, have not been inter-calibrated at this present time. The proposed methods for determination of parameters are only in general those the related labs used only according to their standards or guidelines.

Table 2. Materials and methods for chemical analysis.

Parameters		Determination in situ / in Lab*	Operation on board	Method
Routine parameters	temperature	S	CTD sensor	
	salinity	S	CTD sensor	
	pH	S	pH sensor	
	transparency	S	Transparency sensor	
	DO	S	DO sensor	
	COD	S	magic stirrer	
	SS	S	SS sensor	
	chlorophyll a	S	Chlorophyll a sensor	
Nutrients	nitrate	S	Spectrometer	Spectrometry
	nitrite	S		
	ammonium	S		
	phosphate	S		
	silicate	S		
Organic pollutants	TOC	L	-	TOC analyzer
	TPH	L/E	Extraction equipment	Fluorospectrometry
	PAHs	L/E		GC-MS
	PCBs	L/E		GC-MS
	OCPs	L/E		GC-MS
Heavy metals	Cu	L/F	Teflon sampling bottle	Graphite furnace atomic absorbance spectrometry
	Pb	L/F		
	Zn	L/F		

	Cd	L/F		
	Cr	L/F		
	Hg	L/F	-	Atomic fluorospectrometry
	As	L/F	-	

Note * S: determination in situ or in laboratory on board;

L: determination in laboratory on land;

L/F: filtration on board and then analysis in laboratory on land;

L/E: Extraction on board and then analysis in laboratory on land.

4. Required Personnel On-board

The persons to be on board are proposed by RWG-P from both countries. The names and responsibilities are listed in Table 3. Since a lot of *in-situ* measurements will be done on board, it is proposed that 6 persons will be an *in-situ* working group and divided as 3 teams. 2 persons (one from Korea and one from China) will be a team who works for 8 hours. The in-situ recording tables and data records should be doubled for verification. The data recording formats will be discussed further and the requirements for *in-situ* operation will be set up before the cruise. The chairperson will nominate the leader of *in-situ* working group after the technical meeting in discussion with all members of RWG-P.

Table 3. Persons On-board.

China	Mr. Jiang Yuewen Senior Engineer Division of Mar. Env. Chem NMEMC No.42, Linghe Street Dalian 116023 Tel: 86-411-84782808 ywjiang@nmemc.gov.cn	Mr. He Guangkai Analytical Engineer Central Measurement Lab NMEMC No.42, Linghe Street Dalian 116023 Tel: 86-411- 84782507	Mr. Na Guangshui Analytical Engineer Central Measurement Lab NMEMC No.42, Linghe Street Dalian 116023 Tel: 86-411-84782507 gsna@nmemc.gov.cn
Korea	Dr. Un Hyuk Yim Marine Environmental Risk Assessment Research Division South Sea Institute KORDI 391, Jangmok-ri, Jangmok-myon Geoje Gyungnam 656-830 Korea uhyim@kordi.re.kr	Mr. Sung Young HA Marine Environmental Risk Assessment Research Division South Sea Institute KORDI 391, Jangmok-ri, Jangmok-myon Geoje Gyungnam 656-830 Korea syha@kordi.re.kr	Mr. Pan Soo Park Marine Environmental Risk Assessment Research Division South Sea Institute KORDI 391, Jangmok-ri, Jangmok-myon Geoje Gyungnam 656-830 Korea parapy@kordi.re.kr

5. Proposed Follow-up Work for Analysis of Samples

The follow-up work for analysis of samples is proposed as follows. NMEMC and South Sea Institute of KORDI will be the major candidates for analyses of samples. Other labs will be decided, based on the results of the inter-calibration exercise. RWG-P hopes more labs participating in the analysis of samples but with quality certificates or verification.

6. Workplan

The brief workplan is proposed as follows:

Aug – Sep of 2005:

- to refine the workplan
- to prepare the agents and chemicals for analyses
- to prepare the unified methods and standards

Oct – Dec of 2005:

- to participate inter calibration exercise among the laboratories
- to summarize the results from inter-calibration exercise
- to improve the analytical procedures and methods

Dec of 2005:

- to prepare the joint survey
- to adjust in-situ instruments and devices
- to move all facilities and devices to Qingdao

Jan of 2006:

- to implement the joint survey plan
- to separate samples and deliver to different labs

Feb of 2006:

- reporting for joint survey
- starting analyses in land-based labs

Feb – April of 2006:

- analysis in land-based labs
- compilation of data
- preliminary analysis of data

May of 2006:

- final report on first joint survey
- reporting

7. Budget

The budget for pollution component for first survey is shown in Table 4.

8. Suggestions

The following suggestions are proposed in order to achieve good results from the joint survey and analyses of samples:

- The analytical methods or protocols should be discussed and confirmed in order to get the comparable results.
- The SRMs or RMs used for analyses of biota and sediment samples should be as same as possible.
- The data generated from the joint survey should be equally shared
- A detailed schedule should be prepared, including sampling and pretreatment protocols, methods, SRMs or RMs, recording data formats, data processing, QA/QC procedures, etc.

Table 4 Budget for first cruise for pollution component of YSLME

Estimated Budget in US Dollars

Item			Unit Cost (US \$)	Units	Sub-total	Remarks
cost of samples analysis in laboratory	water column	metals	25	364	9100	104 samples for Cu, Pb, Zn, Cd, Cr, Hg and As
		TOC	25	156	3900	156 samples
		TPH	25	52	1300	
		PAHs	220	104	22880	
		PCBs	220	104	22880	
		OCPs	220	104	22880	
Purchase multi-parameters online water analyzer			12000	1	12000	with pH, SS, Chl a, DO sensors
Communication (including phone and cable) cost					800	
Filtration membrane			6	40	240	Acetate Fiber Filter
			150	3	450	Glass Fiber Filter(options, if the online water analyzer with Chl a sensors, this item may be deleted)
Reagent			600	1	600	for COD and nutrient determination
Subsidy for personnel on board			50	210	10500	6 persons, 70 days, 2 cruise
Personnel transportation costs		China	160	3	480	4 persons 1 round trips (Dalian-Qingdao-Dalian)
		Korea	350	3	1050	3 persons 1 round trips (Korea-Qingdao-Korea)

Equipment transportation costs		China	300	1	300	spectrometer, sensor, pH meter, sampler, samples containers, 1 round trips (Dalian-Qingdao-Dalian)
		Korea	600	1	600	1 round trips (Korea - Qingdao-Korea)
Samples transportation costs		China	300	1	300	deliver samples to laboratories, once per cruise
		Korea	600	1	600	deliver samples from Qingdao to Korean laboratories, once per cruise
PC			1500	1	1,500	for connecting with the online water analyzer
PC Software			200	4	800	
Printing			500	1	500	
Contingency					1137	1% of total budget
Overhead					5740	5% of total budget
Grant Total					120,536	

