

## **Annex VIII**

### **HAB Case Studies**

## 1. Background

CEARAC compiled the National Reports that introduce current situation on harmful algal blooms (HABs) in each country of NOWPAP member states and published the Integrated Report based on the National Reports on HABs in the NOWPAP region in the 2004-2005 biennium.

In the Integrated Report, the need to mitigate HABs in the NOWPAP region is mentioned. Based on this need, "Booklet of Countermeasures against HABs in the NOWPAP Region" was published in the 2006-2007 biennium, which summarizes information on countermeasures implemented in each country.

In order to share information on HAB occurrence more effectively and enhance actions against HABs in each member state, CEARAC proposed to implement HAB Case Studies for the 2008-2009 biennium at the 12th NOWPAP IGM and 6th CEARAC FPM, and it was approved.

## 2. Objectives

Objectives of HAB Case Studies are to establish the most effective and laborsaving ways for sharing information among the NOWPAP member states about HAB occurrence, oceanographic and meteorological condition and nutrients in selected areas for HAB Case Studies and to summarize common concerned items in the NOWPAP region in the report.

## 3. Status of implementation

### 3.1 Selection of areas for HAB Case Studies in each member state

The areas for HAB Case Studies in each member state were selected by CEARAC FPs. These areas are sea areas where HAB monitoring has been already implemented regularly because HABs occur frequently or HAB occurrence will be concerned in the near future. Selected areas and experts who implement HAB Case Studies are as follows;

	Experts	Target sea areas
China	Dr. Zhiming YU	Yellow Sea and adjacent area
Japan	Japanese Consultant	Northwest sea area of Kyushu region
Korea	Dr. Yang Soon KANG	Southern coast of Korea
Russia	Dr. Tatiana ORLOVA	Inner part of Amursky Bay

### 3.2 Implementation of HAB Case Studies

CEARAC concluded the MoU for HAB Case Studies with the experts. They are implementing HAB Case Studies in each selected sea area and the progress reports of HAB Case Studies will be reported and reviewed at the Second Coastal Environmental Assessment Workshop which will be held on 11 September.

## **4. Future work**

### 4.1 Finalization of HAB Case Studies reports

Based on the review, the progress reports will be revised. Final reports (2008) will be submitted to CEARAC by the end of 2008 and will be uploaded to CEARAC website so that the information will be disclosed not only among the NOWPAP member states but also with other regional seas and international agencies. For sharing information with wider community, CEARAC will promote cooperation with other international agencies such as PICES which has HABs-related database.

### 4.2 Updating the reports (2008) of HAB Case Studies

In 2009, CEARAC will conclude MoU with the same experts for updating the 2008 reports. The experts will collect latest data and update the 2008 reports to establish the most effective way for updating and sharing the information. After 2009, these reports will be updated regularly as a routine task.

## **5. Expected outcome**

Implementation of HAB Case Studies will contribute to establishment of effective and laborsaving ways for sharing information. Also, the achievement of case studies will be listed on a database established by CEARAC's other activity (HAB Integrated Website), so not only information of areas for HAB Case Studies but also information on other sea areas where HABs occur will be wide disclosed.

## 6. Schedule

Schedule of this activity and main body are as follows:

Time		Actions	Main body
2008	Q1	Preparation of workplan	CEARAC and Consultant
		Review of workplan	WG3 Experts
	Mar. (The 6 <sup>th</sup> CEARAC FPM)	Approval of workplan	CEARAC and FPs
	End of Q1	Selection of areas for HAB Case Studies in each country	FPs and WG3 Experts
	Q2	Conclusion of MoU on HAB Case Studies	CEARAC and Experts
	Q2 – Q3	Making progress report	Experts
	Sep. (The 4 <sup>th</sup> WG3/4 Meeting)	Review of progress report of HAB Case Studies	WG3/WG4 Experts
	End of Q4	Submission of final report (2008) to CEARAC	CEARAC and Experts
2009	All year	Updating the reports (2008) (by conclusion of MoU)	CEARAC and Experts

## 7. Budget

Contract	Timing	Output	To be completed	Counterparts	Budget ( US\$)
MoU for HAB Case Studies	2008 end of Q1	- Progress report of HAB Case Studies - Final report of HAB Case Studies	2008 end of Q4	Dr. Zhiming YU	2,000
				Japanese Consultant	2,000
				Dr. Yang Soon KANG	2,000
				Dr. Tatiana ORLOVA	2,000
MoU for updating the reports	2009	Updated report	2009 end of Q4	Expert of China	500
				Expert of Japan	500
				Expert of Korea	500
				Experts of Russia	500
Total					10,000

Annex 1: The overview of HAB Case Studies

Contents		Information
1	Introduction 1.1 Objective 1.2 Definitions and rules used in the HAB case study 1.3 Overview of the target sea area 1.3.1 Location and boundary 1.3.2 Environmental/geographical characteristics 1.3.3 human activities	<ul style="list-style-type: none"> <li>• The main objectives of the case study</li> <li>• Definitions of the terms used in the case study</li> <li>• Rules regarding the use of scientific names</li> <li>• Geographic boundary of the target sea area</li> <li>• Environmental and geographical characteristics of the target sea area (e.g. ocean currents, topography, etc.)</li> <li>• Fisheries, industries, etc.</li> </ul>
2	Methodology used in the case study in the northwest sea area of Kyushu region 2.1 Methodology used in the case study 2.2 Warning/action standards against HAB events 2.3 Target HAB species	<ul style="list-style-type: none"> <li>• The type and scope of data and/information used to grasp the number of HAB events</li> <li>• The type of indicators (e.g. cell density) that are used to warn HAB events</li> <li>• Identification of HAB species that cause fishery damage in the target and adjacent areas. These species will be referred to as 'Target HAB species'</li> </ul>
3	Monitoring framework and parameters of HAB 3.1 Monitoring framework 3.2 Monitoring parameters 3.3 Data and information used	<ul style="list-style-type: none"> <li>• Monitoring organizations and their monitoring areas in the target sea area</li> <li>• Parameters monitored by the monitoring organizations and selection of parameters to be used for the case study</li> <li>• HAB events in the target sea area</li> </ul>
4	Status of HAB events 4.1 Status of HAB events from 19** -2007 4.2 Yearly trends of HAB events 4.3 Yearly trends of HAB seasons 4.4 Yearly trends of causative species	<ul style="list-style-type: none"> <li>• Present the yearly trends in the number of HAB events</li> <li>• Present the number of HAB events for each month and then identify the main HAB periods/seasons</li> <li>• List the HAB causative species and their number of occurrences. Then identify the locations of major HAB areas</li> </ul>

Continue of Annex 1

Contents	Information
<p>5 Status of recent HAB events and results of environmental monitoring</p> <p>5.1 Number of HAB events</p> <p>5.2 Period of HAB events</p> <p>5.3 Duration of HAB events</p> <p>5.4 Location of HAB events</p> <p>5.5 Causative species</p> <p>5.6 Maximum density of each HAB event</p> <p>5.7 Status of HAB induced damages</p> <p>5.8 Status of target species</p> <p>5.9 Environmental monitoring results during HAB events</p> <p>5.10 Water quality parameters of regular HAB monitoring survey</p> <p>5.11 Meteorological observation parameters</p>	<ul style="list-style-type: none"> <li>• Present number of recent HAB events</li> <li>• Present the number of recent HAB events for each month and then identify the main HAB periods/seasons</li> <li>• Present the duration of recent HAB events for each sea area and then identify the HAB duration characteristics</li> <li>• Present the number of recent HAB events for each sea area and then identify the locations of major HAB areas</li> <li>• List the HAB causative species and their number of occurrences. then identify the locations of major HAB areas</li> <li>• Compile all the HAB events that occurred in the target sea area. Then identify the HAB event that had the maximum density.</li> <li>• Present the fishery damage and environmental deterioration that have been induced by HAB events</li> <li>• Present the occurrence status of target species</li> <li>• Present the results of on-site surveys (water temperature/salinity/DO) conducted during HAB events and present results of analysis of relationships with HAB occurrences</li> <li>• Present the results of the regular HAB monitoring surveys</li> <li>• Present the meteorological information during HAB events</li> </ul>
<p>6 Eutrophication monitoring with satellite image</p> <p>6.1 Framework of satellite image monitoring</p> <p>6.2 Parameters of satellite image monitoring</p> <p>6.3 Results of satellite image monitoring</p>	<ul style="list-style-type: none"> <li>• Present available remote sensing data in the target sea area and their characteristics</li> <li>• Present available remote sensing data parameters in the target sea area</li> <li>• Present sea surface chlorophyll-a data measured during HAB events</li> </ul>
<p>7 Conclusion</p>	<ul style="list-style-type: none"> <li>• Consider the relationship between HAB events and environmental parameters by comparing the results of chapters 5 and 6.</li> <li>• Consider the application options of satellite images for monitoring HAB events</li> <li>• Stress the importance of international partnership and cooperation.</li> </ul>
<p>8 References</p>	