

## **Annex VII**

### **Workplan for NOWPAP Working Group 3 (Reviewed and Adopted by the 2<sup>nd</sup> CEARAC Focal Points Meeting)**

Full text of the plan of work for the NOWPAP Working Group 3 is showed in  
Report of the First Meeting of NOWPAP Working Group 3 (HAB)  
(UNEP/NOWPAP/CEARAC/WG3. 1/5)

## Annex VII

### Workplan for NOWPAP Working Group 3

(Reviewed and Adopted by the 2<sup>nd</sup> CEARAC Focal Points Meeting)

#### 1. Background

1.1 Establishment of a collaborative regional monitoring programme was identified as one of areas of the priority for implementation of NOWPAP in the first NOWPAP Intergovernmental Meeting in Seoul, September 1994. The responsibility for NOWPAP/3 (Regional Monitoring Programme) was jointly shared by the Special Monitoring and Coastal Environment Assessment Regional Activity Center (CEARAC) and the Pollution Monitoring Regional Activity Center (POMRAC) to carry out regional activities.

- The 7<sup>th</sup> Intergovernmental Meeting in March 2002 allocated NOWPAP CEARAC the responsibility to implement activities of Working Group (WG) 3 for HAB as a part of Coastal Environmental Assessment and WG 4 for Remote Sensing of Marine Environment as a part of Special Monitoring. The present document proposes the Plan of Work for WG 3.

- In the first FPM of CEARAC in February 2003, the HAB subgroup chaired by Dr. Fukuyo agreed that the following four main issues needed to be focused on;

- (1) Review of the integrated national reports to be prepared by CEARAC with the view to;
  - a. Standardize and establish a system to update national reporting,
  - b. Establish a meta-database on HAB while taking into consideration existing relevant databases, and
  - c. Consider environmental parameters to be added to the meta-database.
- (2) Identification and prioritization of the needs and capabilities through;
  - a. Inter-calibration exercises,
  - b. Capacity building to improve the quality of monitoring,
  - c. Training (taxonomy, toxicology, etc.), and
  - d. Identification and dissemination of new techniques.

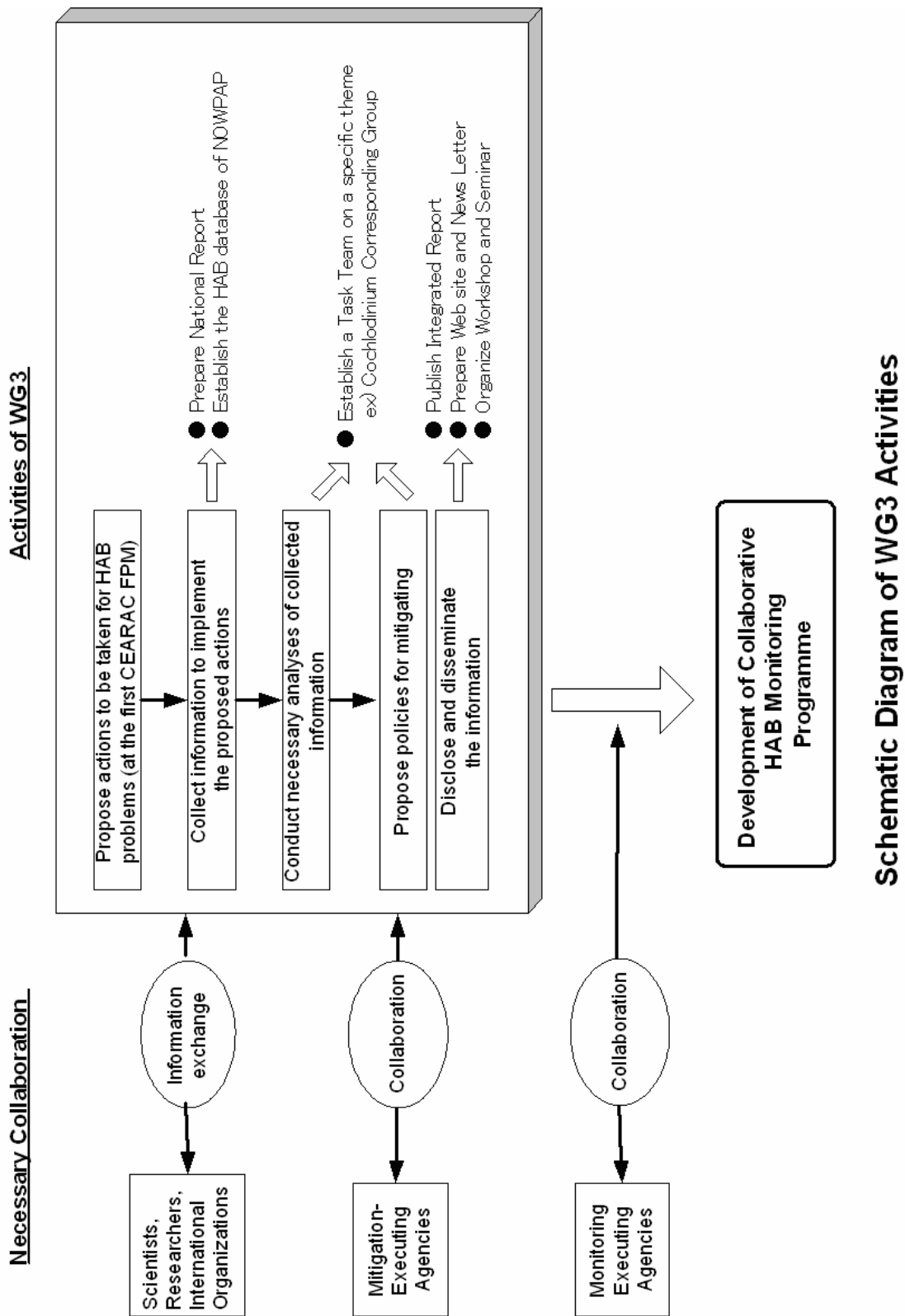
- (3) Identification of important scientific issues and assessment of the potential to incorporate these within the NOWPAP framework.
- (4) Establish information dissemination strategies through the development of regional and national portals which would deal with specific sectors such as aquaculture, tourism, public education with the final aim of enhancing the visibility of CEARAC HAB.
- (5) Longterm strategy
- (6) Proposed working plan for 2004/5
  - a. Prepare for the second FPM
  - b. Inter-session activities
- (7) Capability of CEARAC
  - a. Facility and personnel, cooperation among RACs

## 2. Objectives

(1) The goal of NOWPAP WG3 is to develop the capability to provide policy makers with necessary information on HAB. WG3 will accumulate and distribute knowledge on HAB and will have an eye on the development of collaborative monitoring programme on HAB in the NOWPAP region.

(2) The objectives of WG3 include to propose activities to cope with the HAB problems, to collect information to realize the proposed activities, and to carry out necessary analyses of collected information to make policies for mitigation to HAB.

(3) CEARAC will facilitate the regional monitoring and mitigation activities through the formation of the common understanding on HAB, provision of scientific basis for HAB analysis, and dissemination of information on HAB studies. These will realize the collaborative HAB monitoring and proper mitigation measures in this region.



### 3. Workplan for Working Group 3

#### 3.1 Important Scientific Issues to Cope with HAB Problem

(1) HAB will be defined as proliferation of microscopic algae which can cause massive fish kills, contaminate seafood with toxins, and alter ecosystems in ways that human perceive as harmful. Therefore water discoloration by microalgae, popularly called as red tide, will be in the target phenomena of WG3, as high biomass of microalgae can alter the environment. Proliferation of toxic algae will be also one of the target phenomena, as shellfish and other filter feeders become toxic inadequate for human consumption.

(2) The WG3 gave the first priority to the red tide as the biggest concern in the NOWPAP region, and the toxic plankton issue was addressed as the next topic.

(3) Since the eutrophication was a common concern for all NOWPAP Members as one of the mechanisms of red tide occurrence, the relationship between the red tide occurrence and eutrophication was identified as an important scientific issue. In addition, the importance to study the *Cochlodinium* bloom was also pointed out in the first WG3 meeting because it is the most concerned harmful species in the NOWPAP region, especially in Korean and Japanese waters. The meeting agreed to establish a corresponding group on *Cochlodinium*.

#### 3.2 Establishment of HAB-database of NOWPAP

(1) A database that embraced a wide range of literature concerning HAB in the NOWPAP region was proposed by CEARAC. It contains the relevant literature covering reports and theses of researches, studies, monitoring, countermeasures, and the capacity building. The database will serve as a consolidated and easily available data-source so as to form a common understanding on HAB in this region, to facilitate the HAB studies further, and to produce recommendations for policy making against HAB problems.

(2) The WG3 members contribute to developing the database as an intersessional work of the WG with the financial support by CEARAC. To develop the database the WG3 members are collecting relevant literature and entering necessary information to the datasheet for the database. CERAC will prepare a prototype of the database

which will be examined at the Second WG3 meeting.

### 3.3 Identification and Prioritization of Needs for Capacity Building

(1) Questions on the needs for capacity building to cope with the HAB problems were asked the WG3 members prior to the Meeting. Questions included the situation and needs of the inter-calibration exercise, training, and new mitigation techniques. The answers are summarized as follows:

- All members gave the first priority to the capacity building to improve HAB monitoring.
- In order to improve the HAB monitoring, legislative and administrative enhancement were desired. Technically, species identification and chemical analysis of environmental parameters were given high priorities.
- Among advanced technologies, HAB prediction methodology was most desirable.
- Priority mitigation measures included automatic HAB detection method, HAB attention / alert system and imagery exchange network system.

(2) To define needs for capacity building in the NOWPAP region more specifically, the meeting agreed the WG3 member would prepare the concrete ideas on needed capacity building based on the situation of each country by the second WG3 meeting. WG3 will consider needed capacity building in this region based on the ideas.

### 3.4 Information Dissemination Strategy

All possible measures should be proposed for the dissemination of information obtained through the activities of NOWPAP WG3. Presently, the followings are listed up;

- Provision of a web site to introduce the information on the HAB
- Distribution of newsletter
- Preparation and distribution of pamphlets/brochures

### 3.5 Standardization of National Reports and Integrated Report

(1) The meeting agreed that National Report would be prepared by the WG3 members every two years. Consequently, Integrated Report will be published every two years based on National Reports. National Report will be shared among WG3 members as the necessary information for publishing Integrated Report. Only Integrated Report will be published.

(2) The tentative guideline for National Report was proposed by CEARAC at the first WG3 meeting. The meeting agreed that WG3 members would prepare the National Report based on the tentative guideline by the second WG3 meeting to define the adequacy of the guideline. WG3 will discuss the guideline and finalize it at the second WG3 meeting.

(3) Draft Integrated Report based on National Reports which were submitted to the first CRARAC FPM was proposed by CEARAC at the first WG3 meeting. The first WG3 meeting agreed that the WG3 members would submit comments on it after the meeting. Consequently, the revised Integrated Report prepared by CEARAC will be examined at the second WG3 meeting.

### 3.6 Long-Term Plan

The long-term plan for WG3 is shown in Table 1

### 3.7 Work Plan for 2004/2005

Preparatory work plan 2004/2005 for WG3 is shown in Table 2.



Table 1 Long-term plan for WG3

	2004	2005	2006	2007	2008	2009	2010	2011-	
CEARAC Focal Points Meeting	△	△	△	△	△	△	△		
WG3 Meeting	▲	▲	▲	▲	▲	▲	▲		
Development of HAB-database					Update and Maintenance				.....
Identification and prioritization of needs	▲	▲	▲	▲	▲	▲	▲		
Information dissemination								.....	
Identification and Analysis of Scientific issue	Phase I Red tide				.....				.....
	Phase II Toxic plankton				.....				.....
Development of collaborative monitoring programme									
Promotion of mitigation	.....								
National reports		▲		▲		▲			
Integrated report		▲	▲		▲		▲		

Table 2 Workplan for 2004/2005

	2004												2005																	
	J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J	J	A	S	O	N	D						
CEARAC Focal Points Meeting	▲												▲																	
WG3 Meeting												▲																		
Development of HAB-database																														
Identification and Analysis of Important Scientific Issues																														
Identification and Prioritization of Needs for Capacity Building																														
Development of collaborative monitoring programme																														
Issue of Integrated Report (Submission of National Report)												(▲) trail version						▲					(▲) final version							
Information Disclosure & Dissemination																														
Development of Web Site Content																														
Issue of Newsletter	▲																								▲					

## Appendix 1 Establishment of the HAB-database of NOWPAP

### 1. Objective of HAB-database

A HAB-database that embraced a wide range of literature concerning the HAB in the NOWPAP region was proposed by CEARAC and accepted by WG3 members. It contains the relevant literature covering reports and theses of researches, studies, monitoring, countermeasures, and the capacity building. A list of the relevant literature was distributed to WG3 members by CEARAC to ask for the information/materials to amend the list and to retrieve the literature as PDF files into the database. The HAB-database will be supplemented with newly obtained reports and theses in the course of the progress of HAB studies in the Region. Thus, the database will serve as a consolidated and easily available data-source so as to form a common understanding on HAB in the Region, to facilitate the HAB studies further, and to produce recommendations for policy making against HAB problems.

### 2. Methods and options for literature search

(1) Literature can be searched by country, published year, category, species name and author.

(2) Each literature will be categorized into the following six items, a literature can be provided plural categories if it comprehensive one.

- Occurrence and Monitoring
- Mechanism
- Physiology
- Taxonomy
- Mitigation
- Others

\* The First WG3 meeting decided those categories.

### 3. Access to the database

- The database can be accessed through CEARAC web site.
- The list of the literature will be available for the general public. However, due to copyright reasons, the full (PDF) version of the literature will only be available to authorized persons.

### 4. Future activities

The following works are suggested for future activities of WG3 so to assist decision makers and relevant organizations, and to promote the public information dissemination.

- Collection of information and analysis on *Cochlodinium*  
(*Cochlodinium* has high priority for research, since it has been causing extensive damage to the fisheries in the Region. Also there are abundant research data on this species)  
\* The first WG3 agreed to establish “*Cochlodinium* Corresponding Group”
  
- Information collection and analysis on its physiology, ecology, mechanism of bloom and mitigation measures.
- Proposals for prevention methods and countermeasures.
- Preparation of handbook to assist fishermen and relevant fishery organizations.

## Appendix 2 Guideline for National Report

(Prepared and Submitted to 1<sup>st</sup> WG3 Meeting by CEARAC)

### 1. Concept

National reports should aim at the accumulation of reliable data and information to integrate knowledge on HAB in the NOWPAP region in near future. It is important to keep the consistency among the reports from all NOWPAP Members.

### 2. Proposed Content

- Situation of HAB occurrence (frequency, duration, extensiveness, cell density, and toxicity/damage)
- Monitoring (methodology, parameters, and results)
- Progress of research activities on HAB (causative species, toxicity analysis, mechanism of occurrence, mitigation measures, etc.)
- Introduction of literature including newly obtained information
- Training activities to cope with HAB
- National priority for future activities to cope with HAB
- Suggested activities for the NOWPAP region

### 3. Proposed Format

#### 3.1 Situation of HAB Occurrence

Simply fill up the table below.

Event No.	Location (name of the sea area) *1	Approximate Area suffered (km <sup>2</sup> )	Type of HAB Red tide or Toxic	Duration dd/mm/y -dd/mm/yy	Causative species	Max. cell density cells/L	Mitigation Activity and effectiveness	Damage	
								Fishery resources*2	Human health*3

Source: (a copy of the original should also be submitted to CEARAC)

\*1: provide a map(s) or coordinates showing the HAB area.

\*2: Approximate damage in US\$.

\*3: Number of death and patients

## 3.2 Monitoring

### 3.2.1 Results of regular monitoring on HAB

#### 1) Methodology

- (1) Monitoring method (satellite, aircraft, research vessel, etc.)
- (2) Area or location of monitoring (with a map(s) or coordinates)
- (3) Frequency

#### 2) Parameters monitored

#### 3) Results of the monitoring

### 3.2.2 Results of HAB trace monitoring

The following information will be provided;

Date, Duration, Causative species, Toxicity, Damage, and Mitigation taken against HAB

## 3.3 Progress of Researches and Studies to Cope with HAB

### 3.3.1 Analysis of causative species

### 3.3.2 Toxicity analysis

### 3.3.3 Mechanism of HAB occurrence

### 3.3.4 Development of preventive/countermeasures

### 3.3.5 Others

## 3.4 Literature including newly obtained information

## 3.5 Training Activity to Cope with HAB

All training courses and programmes will be reported with description of;

- 1) Name of the training course/programme
- 2) Objectives of the training course/programme
- 3) Type of the training (lectures, workshop, seminar, laboratory practice, field practice, on-the-job training, etc.)
- 4) Organization (sponsor, trainers, trainees)
- 5) Date and venue
- 6) Contents of the training

## 3.6 National Priority for Future Activities to Cope with HAB

## 3.7 Suggested Activity for the NOWPAP Region

Annex Annual change of fishery production in coastal waters

- for ten (10) years
- by fishery type (coastal fisheries, fish culture, shellfish culture, seaweed culture)
- preferably by area

4. Overall Guidance for Report Preparation

- Put appropriate explanations on the “source” for utilized data and information in the National Report
- Submit a hard copy of literature cited in the National Report.
- Submit a hard copy of National Report together with its electronic files.

## Appendix 3 Contents of Draft Integrated Report of 2004 (Prepared and Submitted to 1<sup>st</sup> WG3 Meeting by CEARAC)

- Chapter 1       Activities of NOWPAP WG3 in 2003
  
- Chapter 2       Situation of HAB in NOWPAP Region
  - 2.1 Scope of HAB for NOWPAP WG 3
  - 2.2 Present Situation of HAB Problems in the NOWPAP Region
  
- Chapter 3       Important Scientific Issue - Relationship between Red Tide Occurrence and Eutrophication
  - 3.1 Establishment of Water Quality Standards for Nitrogen and Phosphorus regarding the Prevention of Excessive Algal Blooms
  - 3.2 Red Tide Investigation in the Eastern Seto Inland Sea, Japan
  
- Chapter 4       Activities Concerning HAB in NOWPAP Region
  - 4.1 NOWPAP Members
  - 4.2 International Organizations and Programs
  
- Chapter 5       Plan of Work for HAB Problems in NOWPAP Region
  - 5.1 Identification of Important Scientific Issues
  - 5.2 Establishment of HAB-database
  - 5.3 Identification and Prioritization of Needs for Capacity Building
  - 5.4 Standardization of National Report and Integrated Report