Sixth Quarterly Report on a Program for Environmental Disaster Mitigation and Prevention in Developing Countries

A. Program Description and Activities to Date:

Utilizing core funds from U.S.A.I.D.'s Office of Foreign Disaster Assistance (OFDA), the World Environment Center (WEC) is implementing prototype prevention and mitigation programs for environmental and man-made disasters and emergencies in high-risk urban centers in India, Mexico, Indonesia and Thailand. The objective of this five-year program is to reduce the incidence and impact of major industrial, hazardous materials transport or other technological accidents and disasters at selected locations in the target countries. The program is being implemented by WEC through Local Accident Mitigation and Prevention (LAMP) programs in each target country. In India, the program is being managed by WEC in cooperation with the National Safety Council (NSC) of India. In Mexico, Thailand and Indonesia, the programs are being managed through the local WEC office in each country.

The specific goal, purposes and outputs of the program, as well as specific indicators for their achievement, are identified in the attached Logical Framework. A series of activities or interventions have been or are being planned and implemented in relation to the different project outputs listed in the Logical Framework (see attached overall schedules I through IV for implementing the LAMP Program in FYs 93 and 94).

In the past quarter, a **Risk Analysis Seminar** was held in Mexico (Mexico City) and **Medical Emergency Response Seminars** were arranged in Thailand (Bangpoo Industrial Estate) and Indonesia (Jakarta and Cilegon Industrial Estate).

B. Impact to date:

WEC believes that good progress toward long term, effective collaboration between industry, government and local community to initiate appropriate disaster prevention and mitigation activities is being indicated at several high-risk sites in the four target countries. In most cases, there is good support from a national nodal agency for replication of LAMP programs at multiple sites throughout each target country.

1. Mexico

WEC/Mexico believes that one or more self-actuating emergency response groups are taking shape in the petrochemical site of Coatzacoalcos, led by the industry mutual aid group ("CLAM"),

local Gubernacion agents and representatives of the different municipalities. All three groups were well represented in the seminar in late November and early December 1993 and appear to be energized in 1994. The CLAM has set an ambitious plan in '94 and is starting to establish permanent links within various segments of the local community. WEC/Mexico visited Gubernacion and concerned municipal authorities in Coatzacoalcos and Jalapa (Vera Cruz State Capital) in February 1994 to monitor their plans and programs to ensure that LAMP program objectives are being achieved.

WEC's concentrated efforts in the State of Veracruz paid rich dividends in early 1994. Through the unfortunate occurrence of a actual technical emergency in Cordoba (a city roughly 50 kilometers from Coatzacoalcos) trained emergency responders from WEC's seminar in December '93 demonstrated their ability to effectively respond to a technical accident. Following a technical accident injuring 35-40 people, the Cordoba local medical community felt unable to respond. Having seen and read media reports on the WEC seminar, the local doctors contacted the Coazacoalcos medical community. The Coatzacoalcos medical community acted superbly - first giving initial recommendations for first response over the phone, followed by actually going out to the site of the accident and assisting in the treatment of victims. The event demonstrated progress toward developing a trained cadre of emergency responders (Output #1 on LogFrame).

2. India

The APELL seminar/workshops conducted in October 1992, training in medical response in April 1993, and the CEP&AP training programs in October 1993 have brought significant changes in the thinking of the government, industry and community in Madras and Bombay. There is greater concern, commitment and dedication to strengthen disaster management. A number of industrial firms and related industry associations in Madras and Bombay are utilizing table top modeling to refine on-site and off-site emergency planning. There are now firm assurances that local and state governments are cooperating with industry and community to develop good emergency preparedness systems. In a few units, mock emergency drills schedules have been postponed to a later date to allow more community participation.

Four more chemically sensitive cities have been identified for future activities. These are Kanpur (North), Cochin (South), Haldia (East) and Baroda (West).

3. Thailand

The WEC LAMP Coordinator has stimulated the organizing of mutual aid industry clubs and the setting up of cooperatively-managed offices in both industrial estates. By this means he has been

able to assess existing resources for emergency response, obtain pooling agreements for sharing of fire fighting and chemical spill control equipments, initiate specialized training of emergency response personnel and establish liaison procedures with nearby municipal authorities. One of the outputs of this effort is the agreement by the local municipal authority near Bangpoo to pre-position three (of six) fire-fighting trucks in the Bangpoo industrial estate itself, in a former testing laboratory and attached living quarters. Also, since the CEP&AP course, the local fire company has now been equipped with personal protection gear and other supplies for fighting chemical fires and spills.

4. Indonesia

The Cilegon/Anyer/Merak area is a high priority area for improving local emergency planning for technological disasters. There is a high concentration of chemical and related industry in close proximity with the civilian population. WEC/ Indonesia is working with the local industry mutual aid group ("BILIK"), which can hopefully serve as the nucleus for the formation of work groups to develop contingency plans, mutual aid agreements, emergency response infrastructure needs, training, and establishing a communication strategy with the surrounding civilian population. The PT Arun LNG plant in Lhokeseumawe has state of the art fire and spill response facilities, contingency planning, training, exercises, and communications which can serve as a model to help educate local industry and government personnel in other industrial areas of Indonesia.

5. Miscellaneous Activities

The study initiated in early July 1993 by the Environment and Natural Resources Center of Costa Rica (CEDERENA) is still not complete.

Logical Framework
for
A Comprehensive Program of
Local Accident Mitigation and Prevention (LAMP)

Narrative Summary	Measurable End of Project (EOP) Indicators	Means of Verification	Important Assumptions
Goal: 1 Contribute to sustained economic development in target coutries and regions by preventing technological accidents and mitigating the impact of both technologically induced and natural disasters.	1.1 Comprehensive programs of local accident mitigation and prevention (LAMP) established and operated effectively at targeted locations. 1.2 Incidence and impact of industrial accidents abates proportionate to PMP activities.	1.1 Project participants at targeted locations provide feed-back on achievements. 1.2 Quarterly progress reports. 1.3 Midterm project evaluation at end of 24 months. 1.4 End of project evaluation.	1.1 Organizations at pilot sites, including local industry leaders, governmental officials and PVO's, collaborate effectively. 1.2 International developmental institutions, banks and insurance firms support goals and investment needs of high-risk local communities.
Purpose: 1 Reduce risks to persons and property caused by the threat of technological accidents and disasters. 2 Improve capabilities to respond to technological emergencies and natural disasters.	1.1 Active participation of local community and government representatives in periodic (semi-annual) accident simulation exercises that have been organized by local industry at each pilot site. 1.2 Successful transition of focus of local coordinating groups from accident preparedness to disaster mitigation and prevention activities. 2.1 Local coordinating groups meet regularly (at least annually) with national officials charged with responding to natural and man-made disasters.	1.1 Attendance records at training sessions and simulations sponsored or organized by local coordination committee at each site. 1.2 Before and after assessments of chemical or industrial risks and environmental pollution. 2.1 Improved local and national regulations and legislation related to emergency preparedness and response.	1.1 Long term, effective collaboration between industry, government and local community to initiate appropriate disaster prevention and mitigation activities. 1.2 Support of national nodal agency for replication of LAMP activities to multiple sites is maintained for life of project. 1.3 Productivity maintained or enhanced at major industries in target locations. 2.1 Effective collaboration of local groups to respond to emergencies and disasters.

Logical Framework
for
A Comprehensive Program of
Local Accident Mitigation and Prevention (LAMP) (Cont.)

Narrative Summary	Measurable End of Project (EOP) Indicators	Means of Verification	Important Assumptions
Outputs: 1 Trained cadre of responsible officials from industry, government and community organizations committed to implementing technological accident prevention and mitigation.	1.1 Effective emergency response training designed and implemented on behalf of local participants.	1.1 Training course evaluation reports.	1.1 Training is well executed and cost-effective.
	1.2 Active participation in accident sumulations by key individuals from fire, medical, industry and community teams.	1.2 Training course financial records. 1.3 Individuals interviewed against codified check list.	1.2 Participants use new technical skills and share knowledge.
2 Emergency preparedness and response plans at industrial plant level completed in relation to defined accident scenarios.	2.1 80% of industrial plants at each site have on-site emergency plans.	2.1 Samples of emergency plans provided to local coordinating committee.	2.1 Local industries have the knowledge, will and resources to organize plans.
3 Emergency preparedness and response plans at community level completed.	3.1 Plans prepared in relation to specific industrial plant or hazardous materials handling accident scenarios.	3.1 Samples of emergency plans provided to local coordinating committee.	3.1 Chemical risks are well documented and accident scenarios clearly defined and understood by community.
4 Emergency plans tested periodically.	4.1 Plans tested thoroughly by periodic emergency exercises with affected groups and revamped accordingly.	4.1 Samples of revised emergency plans submitted to local coordinating committee for approval.	4.1 Participating groups support plan changes when proposed.
5 Program replicated in other sites in target country.	5.1 Number of sites initiating LAMP activities.	5.1 Programs are replicated in other sites/regions.	5.1 Nodal organization and local bonding agents have sufficient commitment and resources to replicate programs.
6 Principal LAMP coordinating groups capable to respond to man-made and natural disasters.	6.1 Trained personel in positions of responsibility at responding agencies.	6.1 Agencies responsible for natural disaster responses verify support of LAMP groups.	6.1 Local coodinating groups and national nodal organizations cooperate on disaster response.

Logical Framework
for
A Comprehensive Program of
Local Accident Mitigation and Prevention (LAMP) (Cont.)

Narrative Summary	Measurable End of Project (EOP) Indicators	Means of Verification	Important Assumptions
Activities: 1.1 Install project management system in U.S. and target countries. 1.2 Contact responsible persons from nodal organizations and bonding agents at proposed test sites, ensure commitment and determine needs. 1.3 Design and arrange training programs for local officials in community awareness, risk analysis, emergency preparedness & response and hazardous waste handling. 2.1 Provide limited technical assistance to some firms in formulating emergency preparedness and response plans. 3.1 Arrange technical assistance for local coordinating groups to formulate integrated emergency preparedness and response plans. 4.1 Assist in testing and modifying local emergency plans. 5.1 Support extension or replication of successful LAMP operations to multiple sites in target country. 6.1 Utilize capacity of local officials and resources to respond to man-made and natural disasters.	Resources/Inputs: 1.1 Costs estimated at $3.5 million for four countries over 5-year period. Cost in first three years expected to be roughly $2.5 million. 1.2 Details of LAMP implementation activities in each country and detailed budgets are given in Annual Work Plans, as updated each year.	1.1 Annual Work Plan as updated each year. 1.2 Progress reports and quarterly accounting records. 1.3 Documented impact of each training program in relation to stated training objectives. 1.4 Reports of outcomes and follow-up on activities resulting from each training program and workshop. 2.1 Reports of industry experts sent to assist individual firms. 3.1 Reports of resource support experts sent to individual sites; results verified by participating groups. 4.1 Reports of experts sent to analyze local and national feedback on effectiveness of emergency plans as excersized. 5.1 Reports of bonding agent and/or nodal organization selected for each target country.	1.1 Sufficient project administration resources are available. 1.2 Effective nodal organization and competent bonding agent can be found in each country. 1.4 Qualified local personnel identified, trained and kept in positions of responsibility. 1.5 Training programs provide sufficient revenues to become self-sustaining. 2.1 Cost effective investments arranged, as required, to achieve industry goals. 3.1 Qualified technical advisors available to work closely with LAMP personnel over life of project. 4.1 Community leaders cooperate to make programs cost effective and productive. 5.1 Funding for project sustained as planned. 5.2 Pilot LAMP officials and bonding agents are committed to replicating programs.

WEC LAMP PROGRAM IMPLEMENTATION SCHEDULE I

1992/93

COUNTRY/SITE	SEPT	OCT	NOV	DEC	JAN	FEB	MAR	APR
THAILAND								
MTPhut		XXX			AAPP		HHH MMM	
Bangpoo		XXX			AAPP		MMM	
MEXICO								
Coatzl.	XXX				HHH			
Montrey.			XXX			YYY		SSS
Guadlhr.								
INDIA								
Madras	SSS						MMM	
Bombay		XXX					MMM	
Kanpur								
INDONESIA								
Lhoksmwe.							HHH	
Cilegon							XXX	
MISC. ACTIVITIES								
Brazil			SSS					
Jamaica							AAPP	
Costa Rica								SCT

LEGEND

XXX PRE SEMINAR/WORKSHOP MEETINGS (planned) (* = tentative) **(actual)**
YYY PRE SEMINAR/WORKSHOP SITE CHECK
AAA SITE RISK ASSESSMENT
TTT TRAINING IN EMERGENCY PLANNING
DDD MOCK EMERGENCY DRILL

SCT SCOUTING VISIT
SSS APELL SEMINAR/WORKSHOP
PPP SITE PLAN ASSESSMENT
MMM TRNG. IN MED. RESPNS. TO CHEM. EMERGENCIES.
HHH HIRING OF LOCAL EMERG. PREP. STAFF

REVISED 10/18/93

WEC LAMP PROGRAM IMPLEMENTATION SCHEDULE II

1993

COUNTRY/SITE	APR	MAY	JUNE	JULY	AUG	SEPT	OCT	NOV
THAILAND						**TTEE**		
MTPhut							**TTT**	
Bangpoo							**TTT**	
MEXICO						**TTEE**		
Coatzl.								
Montrey								
Guadlhr.								
INDIA						**TTEE**		
Madras							**TTT**	
Bombay							**TTT**	
Kanpur	**YYY**							
INDONESIA						**TTEE**		
Lhoksmwe.								**SSS**
Cilegon								**AAPP**
Bandung								
MISC. ACTIVITIES								
Jamaica	**YYY**							
Costa Rica								

LEGEND

(planned) (* = tentative) **(actual)**

YYY PRE SEMINAR/WORKSHOP MEETINGS
SSS APELL SEMINAR/WORKSHOP
PPP SITE PLAN ASSESSMENT
MMM TRNG. IN MED. RESPNS. TO CHEM. EMERGENCIES.
EEE EMERGENCY EXERCISE TRAINING IN U.S.

AAA SITE RISK ASSESSMENT
TTT TRAINING IN EMERGENCY PLANNING
DDD MOCK EMERGENCY DRILL

REVISED 2/28/94

WEC LAMP PROGRAM IMPLEMENTATION SCHEDULE III

1993/94

COUNTRY/SITE	NOV	DEC	JAN	FEB	MAR	APR	MAY	JUNE
THAILAND								
MTPhut								
Bangpoo					**MMM**			
MEXICO								
Coatzl.		**TTMMFFDD**			**AAA**			WWW
Montrey								
Guadlhr.								
INDIA								
Madras							NNN	
Bombay							DDDCCC	
Kanpur						SSTT		
Cochin						SSTT		
INDONESIA								
Lhoksmwe					**MMM**			
Cilegon					**MMM**		SSS	
Bandung							SSS	
MISC. ACTIVITIES								

LEGEND

SSS APELL SEMINAR/WORKSHOP (planned) (* = tentative) **(actual)**
AAA SITE RISK ASSESSMENT
TTT TRAINING IN EMERGENCY PLANNING
MMM TRNG. IN MED. RESPNS. TO CHEM. EMERGENCIES
CCC TRNG. IN CAMEO SUPPORT TO EMERGENCY PLNG.
WWW TRNG. IN HAZARDOUS MATERIALS HANDLING
PPP SITE PLAN ASSESSMENT
FFF TRNG. IN IND. FIRE FTNG. & SPILL CONTROL
DDD MOCK EMERGENCY DRILL
NNN MEETING OF NATIONAL COORDINATION GROUP

REVISED 4/27/94

WEC LAMP PROGRAM IMPLEMENTATION SCHEDULE IV

1994/95

COUNTRY/SITE	JUNE	JULY	AUG	SEPT	OCT	NOV	DEC	JAN
THAILAND			III*					
MTPhut	FFF*					DDD*		
Bangpoo	FFF*					DDD*		
MEXICO			III*					
Coatzl.								
Montrey					DDD*			
Guadlhr.						DDD*		
Vera Cruz St.	MMM							
INDIA			III*					
Madras								
Bombay								
Kanpur					DDD*			
Cochin						DDD*		
Baroda					SSTT*			
Haldia					SSTT*			
INDONESIA			III*					
Lhoksmwe.		TTFF*					DDD*	
Cilegon		TTFF*					DDD*	
Bandung		TTFF*					DDD*	
MISC. ACTIVITIES								

LEGEND

SSS APELL SEMINAR/WORKSHOP (planned) (* = tentative) **(actual)**

AAA SITE RISK ASSESSMENT

TTT TRAINING IN EMERGENCY PLANNING

MMM TRNG. IN MED. RESPNS. TO CHEM. EMERGENCIES.

CCC TRNG. IN CAMEO SUPPORT TO EMERGENCY PLNG.

WWW TRNG. IN HAZARDOUS MATERIALS HANDLING

PPP SITE PLAN ASSESSMENT

FFF TRNG. IN IND. FIRE FTNG & SPILL CONTROL

DDD MOCK EMERGENCY DRILL

NNN MEETING OF NATIONAL COORDINATION GROUP

III TRNG. IN CHEMICAL INFORMATION CENTERS

REVISED 4/26/94