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BUREAU FOR ASIA AND THE NEAR EAST
WASHINGTON, D.C. 20523

RECORD OF ENVIRONMENTAL DECISION

File No: ANE 08-46 Pakistan SO391-006 ROD CNFA PERSUAP Amended

PROGRAM/ACTIVITY DATA:

Country Code-SO:	391-006
SO Name:	Economic Growth
Country or Region:	Pakistan
Activity Name:	**Record of Decision (ROD) for Amendment to Citizen's Network for Foreign Affairs (CNFA) Pesticide Evaluation Report and Safe Use Action Plan (PERSUAP), Food Security/ Poverty Alleviation in Arid Agriculture Baluchistan**

Funding Begin: December 2004 **Funding End:** December 2008 **LOP Amount**: $6,335,239
Approval Issue: **Pesticide Evaluation Report and Safe Use Action Plan (PERSUAP), amended**

APPROVAL:

Bureau Environmental Officer: John O. Wilson Date: 5/9/08
Approved: ☒
Disapproved: ☐

OVERVIEW

USAID/Pakistan amends its current **Citizen's Network for Foreign Affairs (CNFA) Pesticide Evaluation Report and Safe Use Action Plan (PERSUAP), Food Security/ Poverty Alleviation in Arid Agriculture Baluchistan**, implemented under its Strategic Objective SO391-006 Economic Growth. The original **PERSUAP** was prepared by Dr. Alan Schroeder on May 30, 2007 and approved by the Bureau Environmental Officer (BEO) (ANE 07-145, approved on September 2007). The original **PERSUAP** resulted from the BEO-approved Environmental Threshold Decision (ETD) and Initial Environmental Examination (IEE) (ANE 06-07, approved January 9, 2006). The amended **PERSUAP** addresses the use of the herbicide Glyphosate to combat the weed *Solanum eleagnifolium*. This weed originates from the southwestern U.S. and is exceptionally difficult to eradicate, rendering farmland uncultivable as the weed spreads. This herbicide is recommended by the Food and Agricultural Organization (FAO) and is approved by the U.S. Environmental Protection Agency (USEPA).

ENVIRONMENTAL DECISION

The USAID/Pakistan's **CNFA PERSUAP Amended**, prepared by Dr. Alan Schroeder, dated February 12, 2008, meets the requirements of 22 CFR 216 and is **Approved with Conditions**:

1. Procurement, training and appropriate refresher training in, and use of protective clothing and safety equipment for the most at-risk farmers
2. Training and appropriate refresher training in the safe use of pesticides, integrated pest management (IPM), and environmental protections
3. Administering the Pesticide Use Checklist (PUC) for non-governmental organizations (NGO) and private volunteer organizations (PVO): See original PERSUAP, Attachment 7, Pesticide Use Checklist (PUC) for PVOs, NGOs, and others
4. Producing simple training materials and posters for safe use of pesticides

File No: ANE 08-46 Pakistan SO391-006 ROD CNFA PERSUAP Amended

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IEE File

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ANE 08-46 Pakistan SO 391-006 Approval request I-LED PERSUAP, Amended

Request for Record of Decision
USAID/Pakistan

Country Code-SO	391-006
SO Name	Economic Growth
Country/Region	Pakistan
Activity	Food Security/Poverty Alleviation in Arid Agriculture Baluchistan
Funding	$6,335,239
Activity Period	December, 2004 - December, 2008
Approval Issue	Approval of I-LED PERSUAP, amended

ANE Bureau Environmental Officer Approval:	John O. Wilson	5/9/08 Date
Mission Director Approval:	Anne Aarnes	5/8/2008 Date
Mission Environmental Officer Approval:	Mahmood Hussain	5/5/08 Date
Clearances:		
Deputy Mission Director:	Ed Birgells	5/5/2008 Date
SO Team Leader:	Amy Meyer	5/2/2008 Date
Cognizant Technical Officer, CTO:	Zachery Orend	5/2/2008 Date

Summary:
USAID-Pakistan recommends approval of an amendment to the current PERSUAP, previously established for the Earthquake Reconstruction I-LED* project in August, 2007, which provided for the use of pesticides in certain regions of Northwest Frontier Province (NWFP) and Azad Jammu and Kashmir (AJK). This amendment was prepared by Alan Schroeder, an Environmental Assessment Professional, so that the Asia and near East (ANE) Bureau Environmental Officer (BEO) can approve the expanded use of pesticides for the USAID Economic Growth agricultural assistance activity in Baluchistan, currently implemented by Food and Agricultural Organization (FAO). A copy of the amended PERSUAP is attached.

*I-LED, Improving Livelihoods and Enterprise Development

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Background:
Since 2004, USAID has provided funding to FAO to implement an agricultural activity in Baluchistan to help farmers increase their productivity. One of the agricultural constraints in Baluchistan is the presence of a weed, Solanum eleagnifolium, which originates from southwestern United States and proves exceptionally difficult to eradicate, thus rendering increasing farm land uncultivable as the weed spreads. To address the situation, the FAO project conducted small scale demonstrations of the herbicide Glyphosate, which effectively combats the weed. However, FAO had not obtained appropriate clearances from USAID so these demonstrations have since stopped until appropriate clearance is provided. Given the spreading influence of the weed, FAO anticipates there will be increasing demand for future use of the pesticide.

Amendment to I-LED PERSUAP
The recently approved PERSUAP evaluated proposed, regionally-available, and artesanal pesticides and Integrated Pest Management (IPM) measures that can be used to manage pests of agriculture on the I-LED project. In the PERSUAP, certain pesticides were recognized as accepted for use while other pesticides are listed as being not acceptable under Reg. 216. Among those pesticides that are acceptable is Glyphosate, which is the pesticide that FAO recommends for appropriate use by farmers in Baluchistan. Glyphosate,is approved by the U.S. and Pakistan Environmental Protection Agencies.

The MEO and BEO recommended that we amend the current ILED PERSUAP to provide for the appropriate use of select pesticides for the Baluchistan agricultural project, which is presently implemented by FAO. Alan Schroeder, an Environmental Assessment Professional, was contracted by the Mission to prepare the amendment. He is the same consultant who prepared the I-LED PERSUAP, and he is familiar with the situation in Pakistan.

Among the conditions of the amendment, FAO must comply with the following actions for safer use of and risk reduction from pesticides including:

- Procurement of protective clothing and safety equipment for the most at-risk farmers;
- Training in the safe use of pesticides, IPM, and environmental protections;
- Administering the Pesticide Use Checklist (PUC) for NGOs; and
- Producing simple training materials and posters for safe use of pesticides.

The CTO will ensure that implementing partner is utilizing the Pesticide Use Checklist in monitoring visits.

Amended PERSUAP prepared by Alan Schroeder, February 12, 2008
Original PERSUAP prepared by same, May 30, 2007;
BEO approved as ANE 07-145 on September 28, 2007.

ANE 08-06 Pakistan SO391-006 CNFA PERSUAP Amended

Amendment to CNFA PERSUAP to cover Economic Growth Activity, Food Security/ Poverty Alleviation in Arid Agriculture Baluchistan

Glyphosate is sold in several forms[1]*. The implementing partner, Food and Agriculture Organization (FAO) will utilize the brand Roundup©, which has a concentration of 41% Glyphosate.*

SO 391-006

Pesticide procedures element a: USEPA registration status of the proposed pesticide

Pesticides are registered in the U.S. by active ingredient and by formulation. "Registration status" possibilities of the active ingredients and the formulated products include active registration, never registered, and cancelled. USAID is effectively limited to using pesticide active ingredients registered in the U.S. by the U.S. Environmental Protection Agency for the same or similar uses. Other pesticides not registered in the U.S. may be authorized, but only if the USAID program can show that no alternatives are available, as required under USAID Pest Management Guidelines for the use on non-U.S. registered pesticides. Host country pesticide registration procedures must also be identified and followed.

Glyphosate is registered by EPA.

Pesticide procedures element b: Basis for selection of the pesticide

This refers to the economic and environmental rationale for choosing a particular pesticide. In general, the least toxic pesticide that is effective is selected.

Glyphosate is a non-selective, systemic herbicide that enters the plant through the leaves, and is then translocated to the actively growing meristematic tissues (ends of branches, root tips). Glyphosate blocks the production of certain critical amino acids, ultimately causing plant death. It has little to no soil residual activity.

The main environmental considerations for the use of glyphosate are:

1) Residuals: Soil microorganisms degrade the Glyphosate into natural elements like carbon dioxide. The half life of Glyphosate in the environment is 60 days.
2) Volatility: Glyphosate is non-volatile, which makes the potential for inhalation or redistribution through the air very low.
3) Bio-accumulation: The studies on animals show there is a minimum retention of glyphosate in the tissues and the compound is quickly eliminated.

Pesticide procedures element c: Extent to which the proposed pesticide use is, or could be, part of an IPM program: USAID policy promotes the development and use of integrated approaches to pest management whenever possible. This section discusses the extent to which the proposed pesticide use is incorporated into an overall IPM strategy.

[1] http://www.pesticideinfo.org/List_Chemicals.jsp?

© PERSUAP, Pesticide Evaluation Report and Safe Use Action Plan
* CNFA, Citizen's Network for Foreign Affairs
** IPM, Integrated Pest Management

Glyphosate can be combined with mechanical weed tilling, hand weeding and hoeing.

Pesticide procedures element d: Proposed method or methods of application, including the availability of application and safety equipment: This section examines in detail how the pesticide is to be applied and the measures to be taken to ensure its safe use.

Glyphosate will be applied with hand-pump backpack sprayers with wands by individuals with appropriate protective clothing and training, and carefully monitored.

Pesticide procedures element e: Any acute and long-term toxicological hazards, either human or environmental, associated with the proposed use, and measures available to minimize such hazards: This section of the PERSUAP Amendment examines the acute and chronic toxicological data associated with the proposed pesticide. In addition to hazards, this section of the PERSUAP Amendment also discusses measures designed to mitigate any identified toxicological hazards, such as training of applicators, use of protective clothing, and proper storage.

The Material Safety Data Sheet (MSDA) for glyphosate (phosphonomethylglycine) recommends it be kept out of reach of children, and that contact with eyes or clothing be avoided. With regard to domestic animals, glyphosate is considered to be relatively non-toxic to dogs and other domestic animals. However, ingestion should be avoided. Ingestion of glyphosate or large amounts of freshly sprayed vegetation may cause temporary irritation of the gastrointestinal system. With proper application, glyphosate is considered to be one of the least toxic herbicides available on the market today.

In the environmental analysis for the use of glyphosate, the following findings are relevant:

- Roundup does not have adverse effects on the development, reproduction or endocrine systems of human and other mammals.
- USEPA classifies glyphosate in E category, as non-carcinogenic for humans.
- The possibilities of soil contamination are minimal because the use environment is very dry and the degradation of the parental molecule is very rapid.
- Due to the direct application methodology and the fast absorption by the target plants, glyphosate does not have long-term residual action on the soil and its short-term effects are minimal in sub-tropical regions.
- The use of glyphosate, following proper norms of application, results in very low possibilities of water flows contamination rainwater or leakage of residues from direct application to soil or leaves.
- If glyphosate accidentally enters into contact with surface water bodies, it is immediately absorbed by sediments where it degrades. This type of contact will be prevented by the appropriate training of personnel in charge of product application, storage and handling.

- Glyphosate is non-volatile, i.e. it has minimal possibilities of being inhaled by humans or animals, or redistributed by air.
- The direct application methodology, plus bio-safety norms guarantees the correct application, avoiding the contamination of forest areas or other kinds of vegetation surrounding crops. This methodology contributes to the protection of fragile ecosystems near crops and the preservation of forests species, which serve as ecological centers and as feeding resource for other flora and fauna.
- Glyphosate does not affect species such as mammals, birds, and worms given that the lethal doses per weight, are likely far over the dosages that may be used.

The EPA Reregistration Eligibility Decision (RED) Fact Sheet[2] supports many of the previous statements, and in their content it is necessary to highlight:

> Glyphosate is readily degraded by soil microbes into aminomethyl phosphonic acid, which is degraded into carbon dioxide.
> Glyphosate is no more than slightly toxic to birds and is practically non-toxic to fish, aquatic invertebrates and honeybees, but moderately toxic to crustaceans.
> Based on current data, EPA has determined that the effects of glyphosate on birds, mammals, fish and invertebrates are minimal.

Pesticide procedures element f: Effectiveness of the requested pesticide for the proposed use: This section of the PERSUAP requires information similar to that provided in item b, but more specific to the actual conditions of application. This section also considers the potential for the development of pest resistance to the proposed insecticide.

Glyphosate could potentially be applied in various conditions as it is currently being applied throughout the world for many purposes.

Pesticide procedures element g: Compatibility of the proposed pesticide use with target and non-target ecosystems: This section examines the potential effect of the pesticide on organisms other than the target pest (for example, the effect on bee colonies kept in the area). Non-target species of concern also include birds and fish. The potential for negative impact on non-target species should be assessed and appropriate steps should be identified to mitigate adverse impacts.

Glyphosate is no more than slightly toxic to birds and is practically non-toxic to fish, aquatic invertebrates and honeybees, but moderately toxic to crustaceans (see attached herbicide comparison table).

Pesticide procedures element h: Conditions under which the pesticide is to be used: This section examines issues such as the potential for contamination of surface and groundwater sources.

[2] http://www.epa.gov/oppsrrd1/REDs/factsheets/0178fact.pdf

The Balochistan Plateau is a high-altitude dry area located west of the Sulaiman-Kirthar Mountains. Soils are sandy with a calcite layer in most places. Its western part is dominated by a number of sub-parallel ranges: the Makran Coast Range (600 m), and the Central Makran Range (900 - 1200 m). The highest peak Ras Koh, attains a height of 3010 m. Groundwater contamination is a possibility, thus use where groundwater tables are high should be avoided or monitored.

Pesticide procedures element i: Availability of other pesticides or non-chemical control methods: This section identifies other options for control of pests and their relative advantages and disadvantages.

Several other herbicides are compared with glyphosate in the table at the end of this report. For example, paraquat is considered more toxic to humans and animals and presents additional environmental concerns. Also, application costs for many of these other pesticides are generally higher than for glyphosate. In general, costs are lowest for hand weeding and hoeing.

Pesticide procedures element j: Host country's ability to regulate or control the distribution, storage, use, and disposal of the requested pesticide: This section examines the host country's existing infrastructure and human resources for managing the use of the proposed pesticide. If the host country's ability to regulate pesticides is inadequate, the proposed action could result in greater harm to the environment.

Pakistan still has a long ways to go to improve pest and pesticide management for smallholder farmers. The fact that there are many issues adds to the risk that unintended consequences of pesticide use will occur. FAO can reduce these risks by training participants, providing safety equipment, and monitoring participants for compliance. The unintentional (by accident) pesticide poisoning rate is too high in Pakistan to take a risk that FAO (and ultimately USAID) clients may be poisoned. According to a recent (about 2000) report by the Pakistan Agricultural Research Council (PARC), as many as 10,000 farmers are poisoned annually by indiscriminate use of pesticides in cotton growing rural areas only.

Pesticide procedures element k: Provision for training of users and applicators: USAID recognizes that safety training is an essential component in programs involving the use of pesticides. The need for thorough training is particularly acute in developing countries, where the level of education of applicators may typically be lower than in developed countries.

USAID recognizes that safety training is an essential component in programs involving the use of pesticides. The need for thorough training is particularly acute in developing countries, where the level of education of applicators may typically be lower than in developed countries.

Training in IPM and Safe Use are of paramount importance for Pakistanis using pesticides, due to high rates of unintended poisonings. There has been some training in IPM and pesticide safe use in Pakistan, however the FAO project can assist with this need. Such training (of trainers) should commence before the next field season, that is, before June 2008 (before or with pesticide donations).

Pesticide procedures element l: Provision made for monitoring the use and effectiveness of each pesticide. Evaluating the risks and benefits of pesticide use should be an ongoing, dynamic process.

Baluchistan Pilot Project: Economic Growth Project, Poverty Alleviation in Arid Agriculture staff will monitor pesticide efficacy and effects to the environment on an on-going basis and switch to alternative pesticides as the need arises. Program site managers will monitor for efficacy against pests and impact on beneficial organisms.

Prepared by: Alan Schroeder

Date: February 12, 2008

Table Comparing Herbicides

Active Ingredient	Class	EPA Reg	RUPs	Human Health Issues: Acute tox WHO	Acute tox EPA	Chronic tox Issues	G-water	Ecotox: fish	bees	birds	amphib	worm	molusk	crust	aqu ins	planktn
fluazifop-p-butyl	propionic acid	yes	no	III	II & III	none	no data	MT	ST	PNT					ST	
fluazifop-p-butyl banned/restricted/canceled in 1 country																
formasulfuron	sulfonylurea	yes	no	none	III	none	no data									
glyphosate	phosphonoglycine	yes	no	II & III	U	none	potential	ST	ST	NAT		PNT		MT		ST
iodosulfuron methyl NaCl	sulfonylurea	yes	no	none	III	none	no data	NAT	PNT	PNT		ST				
isoxadifen ethyl	unclassified	**no**		none		none	no data									
MCPA	chlorophenoxy acid	yes	no	II	II, IIII	cancer-possible	no data	ST	PNT	NAT	ST		ST	NAT	NAT	ST
MCPA banned/restricted/canceled in 1 country																
mecoprop (MCPP)	phenoxy acid	yes	no	III	III	cancer-possible	potential	ST					MT			
mefenpyr diethyl	unclassified	**no**		none												
mesotrione	unclassified	yes	no	none	II, IIII	none	no data									
metribuzin	triazinone	yes	no	II	II & III	Endocrin-suspect	potential	ST	NAT	MT				ST		ST
paraquat	bipyridylium	yes	**yes**	I & II	II	R&D toxin Parkinsons	potential	ST	NAT	MT	ST		ST	ST	NAT	ST
rimsulfuron	sulfonylurea	yes	no	U	III	none	potential	NAT								NAT

KEY: EPA Reg = Registered by Environmental Protection Agency (EPA); RUP = Restricted Use Pesticide; Chronic tox = chronic human health toxicity issues
Acute tox = acute toxicity by World Health Organization (WHO) & EPA classification methods; G-water = Groundwater contamination;
Ecotox = Environmental toxicity classification: NAT = Not Acutely Toxic; PNT = Practically Non-Toxic; ST = Slightly Toxic; MT = Moderately Toxic;
HT = Highly Toxic; VHT = Very Highly Toxic; crust = crustaceans; aqu ins = aquatic insects