

**Prevention of Suicidal Behaviours:  
Feasibility Demonstration Projects on Community  
Interventions for Safer Access to Pesticides**



**World Health  
Organization**

***IASP***

*International Association  
for Suicide Prevention*

World Health Organization  
International Association for Suicide Prevention

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# Prevention of Suicidal Behaviours: Feasibility Demonstration Projects on Community Interventions for Safer Access to Pesticides

## Introduction

The intersectoral global public health initiative on the Impact of Pesticides on Health: Preventing Intentional and Unintentional Deaths from Pesticide Poisoning has been launched several years ago as part of the WHO worldwide initiative for the prevention of suicide (SUPRE), with the overall aim to reduce morbidity and mortality related to pesticide poisoning.

Intentional and unintentional pesticide poisoning is a serious problem in many agricultural communities of low- and middle-income countries, such as China, India, and Sri Lanka. It is estimated that there are 250,000 deaths from pesticide poisoning every year, most of which are intentional, and which account for about one third of all deaths from suicide worldwide. In WHO, the Department of Mental Health and Substance Abuse, the Department of Violence and Injury Prevention and Disability, and the Programme on the Promotion of Chemical Safety all share a common interest and concern in working together with other partners, both within and outside the WHO, to advance this intersectoral global public health initiative.

Objectives of the initiative comprise the following five components:

- Review and recommend improved pesticide policies;
- Implement sustainable surveillance of pesticide poisoning;
- Improve the medical management and mental health care of people with pesticide poisoning;
- Provide training at various levels;
- Develop or strengthen community programmes that minimize risks of intentional and unintentional pesticide poisoning.

Regarding the last component, i.e. community programmes, the World Health Organization (WHO) and the International Association for Suicide Prevention (IASP), an NGO in official relations with WHO, have agreed on a project collaboration to conduct jointly activities related to "Best practices on community action for safer access to pesticides".

To this end, a meeting was held in Geneva, Switzerland, from 10-12 May 2006, to identify the current state of knowledge on effective and acceptable community interventions that have significant potential in preventing self-harm by pesticide poisoning. The basic information and recommendations arising from that meeting were summarized in the publication entitled "Safer Access to Pesticides: Community Interventions", 2006.

## Objectives

Against this background, the present document reports on a subsequent meeting of experts on Feasibility Demonstration Projects on Community Interventions for Safer Access to Pesticides, convened in Nonthaburi, Thailand, 5-7 December 2007, to select interventions from those that had been identified previously and to prepare protocols to conduct feasibility demonstration projects of these actions.

The expected outcomes of the meeting were protocols for the demonstration of feasibility of community-level interventions for safer access to pesticides and the identification of sites where to conduct those demonstration projects and their principal investigators.

Following the welcome of the meeting participants (Annex 4) by J.M. Bertolote, the chair (B. Mishara) and rapporteur (A. Fleischmann) were elected. The agenda (Annex 3) was approved with the addition of an update of new findings. J.M. Bertolote introduced to the objectives of the meeting, A. Fleischmann presented an overview about the global public health initiative on pesticides and health and the interventions identified during the previous meeting, and B. Mishara and V. Scott informed about experiences and findings from IASP pesticide initiatives.

## Relevant information

- The interim conclusions based on data collection during 18 months from the study by Oxford University and Sumithrayo confirm the acceptability of locked boxes in Sri Lanka (90% acceptability among farmers). A final report is expected in early 2008. A future large-scale evaluation with about 10,000 boxes is envisaged.
- In India, the final report of the National Review on Pesticide Suicide, by SNEHA and University of Oxford, has been accomplished. In particular, there is a high rate of pesticide and farmer suicide in four semi-arid states of India where one third of the population lives. A popular author wrote about it in the Indian national newspaper which helps to raise awareness about this issue.
- Intentional poisoning with pesticides is also an issue in Central and South America and in countries of the Caribbean. In Nicaragua and Costa Rica there have been a number of educational programmes with some hints that they show positive effects, although no comparative data have been collected. A WHO workshop was held in Leon, Nicaragua in 2007 and further ones are envisaged in the future (in English speaking countries of the Caribbean and in South America).
- There is an increasing body of evidence that chronic exposure to pesticides may increase impulsivity and suicidal ideation. This should be kept in mind when reviewing different storage options.

- Given the renewed determination of the Chinese Government to improve food safety and decrease its exports of poisonous substances, and continuing concerns about the health affects of pesticides, China's Ministry of Agriculture has recently decided to completely ban the production and export of five category I organophosphate pesticides.

## Process

- In order to facilitate the selection of potential interventions for further development, criteria were proposed and each potential developer of a feasibility demonstration project described their projects according to these criteria (see Annex 1).
- The whole group split into working groups around each potential developer of a feasibility demonstration project, to work on protocols. Subsequently, four protocols were presented (see Annex 2), entitled as follows:
  - Sri Lanka: Secure storage of pesticides to reduce suicide.
  - India: Centralized communal storage of pesticides.
  - China: Cooperative purchase and communal distribution of pesticides at the village level.
  - China: Community-wide educational and promotional effort to raise awareness about the health risks associated with pesticide use and to assist in the development of community-specific methods for enhancing safe use, storage and disposal of pesticides.
- The budgets of the proposed projects were estimated roughly as follows:
  - *Sri Lanka*: ~20,000 USD in the first year; ~15,000 USD in the second year.
  - *India*: preliminary assessment ~6-7,000 USD; then ~20,000 USD in the first year; ~15,000 USD in the second year.
  - *China*: preliminary assessment of the "Cooperative purchase and communal distribution" project ~5,000 USD; then each project ~50,000 USD for three years.
- It is recommended that any intervention should be accompanied by psychosocial interventions.

## Next steps

- Michael Phillips has indicated that he will proceed as soon as possible to verify the acceptability of the projects by the relevant Chinese government agencies, particularly the Minister of Agriculture, and report on this to the Steering Committee.
- Lakshmi Vijayakumar will do some exploratory work to see in which of the potential places in India the project will be conducted.

- The Steering Committee of the WHO/IASP collaborative project will consider the possibility of immediately funding the studies that do not require any preliminary work. It will also consider funding the exploratory work for the projects in China and India.
- Recommendations for funding will include specific timelines and requirements for the implementation and evaluation of the projects, and the submission of intermediary and final reports on the projects that will be funded.

## Annex 1

Criteria for the selection of potential interventions.

	<b>SRI LANKA</b>	<b>INDIA</b>	<b>CHINA</b>	<b>CHINA</b>
<b>Title of the project</b>	"Secure storage"	"Centralized communal storage"	"Cooperative purchase and communal distribution"	"Community-wide educational and promotional effort"
<b>Innovation</b>	Introducing greater community involvement (i.e. monitoring of use of boxes), locked boxes in every active farming family, education, disposal of containers	Totally new to India	Very innovative	Raising awareness in the community is new
<b>Infrastructure</b>	Field workers and trained volunteers, experienced advisory group	a) Tamil Nadu: initiation, b) Kerala: Shreyas (Christian organization), c) Maharashtra: MS Swarninathan (foundation)	In provinces and counties personnel available, identify individuals who are responsible in villages	Women's Federation, local schools, good due to the political system
<b>Support</b>	<i>Public:</i> village support, <i>Government:</i> established links, <i>Industry:</i> yes, <i>Stakeholders (NGO's etc.):</i> networks established	<i>Public:</i> needs working on, <i>Government:</i> National Review has increased interest, support for any initiative reducing pesticide suicides, <i>Industry:</i> needs working on, retailers/ distributors may have reservations, CropLife are interested, <i>Stakeholders (NGOs etc.):</i> good track record	<i>Public:</i> difficult as farmers will not be allowed to keep pesticides in home (control issue), <i>Government:</i> possible bonus within the new policy and current priorities, <i>Industry:</i> resistant because of volume and sales	<i>Public:</i> preferably call it safety which is more sellable than suicide, community involvement, <i>Government:</i> educational campaigns are common, <i>Industry:</i> should not be resistant
<b>Practicalities</b>	Manageable, have already worked in the area	a) Tamil Nadu: questionable, most difficult, nothing there, b) Maharashtra: distance is some issue, best infrastructure, c) Kerala: communist challenges	Ministry of Agriculture needs to buy into the scheme, distances and access are not an issue	China has good practice with campaigns, get local actors involved

	SRI LANKA (ctd.)	INDIA (ctd.)	CHINA (ctd.)	CHINA (ctd.)
Resources	<i>Personnel:</i> already established, advisory group, <i>Economic:</i> costs known	<i>Personnel:</i> no research persons, need to access researchers, trainers, field workers, <i>Economic:</i> good potential from interested agencies	<i>Personnel:</i> identify people in each village, local government could select them, <i>Economic:</i> need incentives for participation, savings from purchasing in bulk	<i>Personnel:</i> develop material, <i>Economic:</i> not a huge cost
Measurability	Outcome: suicide and attempted suicide, disposal of containers, control villages identified, Data collection: not a problem, Process: not a problem	Outcome: feasibility of system, Data collection: not a problem	Outcome: feasibility of system, suicide and attempted suicide, Data collection: challenge, Process: e.g. how much distributed each season	Outcome: suicide, Data collection: challenge, Process: not a problem, e.g. how many hours at school, how many people got in contact with it
Potential for replication	Nationally if accepted by community leaders, other countries can be considered if system can be clearly defined	Very good because of national interest and population	Government will agree if beneficial (controlling quality and sales), population acceptance if money saved	Framework ok, specifics would need to be defined in each community
Potential impact	Three villages will be knowledgeable on safe storage, elders involved	Very good	High risk areas: good, if this works it will effect the class of pesticides, aligns with the new policy on producing pesticides	Don't know yet, once feasibility worked out, needs to be measured on a larger scale

## Annex 2

### Potential projects for further development

<b>SECURE STORAGE OF PESTICIDES TO REDUCE SUICIDE, SRI LANKA</b>	
<b>Purpose</b>	Main purpose of this project is to implement a secure storage of pesticides programme as a suicide prevention activity in 3 villages monitored by existing local community support workers and NGOs in the Southern Province of Sri Lanka.
<b>Objectives</b>	<ol style="list-style-type: none"> <li>1. To introduce a collaborative secure storage of pesticide scheme for all active farmers in 3 villages in the Southern province.</li> <li>2. To engage the community in monitoring the use of secure storage of pesticides.</li> <li>3. To introduce the concept of the safe disposal of used pesticide containers.</li> <li>4. To monitor suicidal behaviour by collecting data from local hospitals and police stations.</li> <li>5. To evaluate the effectiveness of the scheme in comparison with control villages.</li> </ol>
<b>Rationale</b>	<p>Death by suicide and attempted suicide is significant in the Southern Province and the common method (80 to 90%) is by the ingestion of pesticides readily accessible in most farming homes.</p> <p>Though the rate of suicide has decreased appreciably (by 50%) in Sri Lanka since 1995, available data suggests that this decrease is not reflected in the suicide rates in the rural communities and there has been little or no change in the incidences of attempted suicide.</p>
<b>Evidence of effectiveness</b>	<p>Providing secure storage of pesticides has been trialled in similar rural areas and all indications show an acceptance of secure storage in farming households as a preventative strategy for both accidental and non accidental deaths (Pilot Study 2007: Secure storage of pesticides to reduce suicide in Sri Lanka), findings showed that:</p> <ul style="list-style-type: none"> <li>• 82.3% reported using the box all of the time since introduction.</li> <li>• 92.8% reported that they kept the box locked all the time.</li> <li>• 93.6% of the boxes were found locked on inspection at time of interview.</li> </ul>
<b>Cost-effectiveness</b>	<p>Use of community elders and workers to monitor the boxes</p> <p>Use of NGOs</p> <p>Boxes manufactured by local industry</p> <p>Protect pesticides effectively (stolen and elements)</p> <p>Durable metal box (lifetime 10 years)</p>

<b>Target group(s)</b>	<p>Active farming families (500) from 3 villages (farmer, family members and relatives)</p> <p>Village inhabitants in the village to be educated on safe storage and suicide prevention</p> <p>Community workers (headman, midwives, social workers farmers groups, teachers)</p> <p>NGOs working in the area</p>
<b>Key stakeholders</b>	<p>Farmers</p> <p>Local government (social workers employer)</p> <p>Health authorities</p> <p>Lock producers</p> <p>Box producers</p> <p>Agency (governmental or nongovernmental)</p> <p>Sumithrayo</p> <p>Academic institution for evaluation</p> <p>Funders</p> <p>Product industry</p> <p>NGOs (particularly those concerned with suicide and pesticide management).</p>
<b>Activities</b>	<p><b>Programme detail:</b></p> <ol style="list-style-type: none"> <li>1. Identify relevant farming villages (secure storage and control).</li> <li>2. Identify families active in farming in these secure storage villages.</li> <li>3. Hold a series of educational sessions in the use of secure storage boxes, the benefits of secure storage and safe disposal of empty pesticide containers.</li> <li>4. Design, produce and install secure storage boxes in accordance to the findings of the Pilot Study.</li> <li>5. Document family details, history of suicide and attempted suicide, farming practices etc.</li> <li>6. Provide awareness/education programmes on suicide in general and secure storage of pesticides in schools and other village groups specifically.</li> <li>7. Training in secure storage of pesticides for community leaders (village headmen other respected village elders) to monitor the use of the lockable boxes with minimal Sumithrayo intervention.</li> <li>8. Monitor the use of the boxes (community workers) in effective usage.</li> <li>9. Visit by Sumithrayo to each farming family every six months to document progress.</li> <li>10. Collection of suicide and attempted suicide data from the relevant hospitals and police stations to monitor the effectiveness of the programme in containing the problem of suicide.</li> </ol>

<b>Resource needs</b>	<p>Costs of production of the boxes, locks, and box installation.          Personnel time in the agency or agencies that coordinate the distribution of boxes.          Education about the use of boxes.          Monitoring the use of boxes.          Development of training materials and awareness raising publications.          Evaluation and advisory costs.          Administrative support costs (translations, secretarial and communications).          Local transport and subsistence for fieldworkers and volunteers.</p>																																																														
<b>Sustainability</b>	<p>Training of local government and community workers to support on going monitoring (within their personal/professional mandate) is an essential component in this activity.</p> <p>NGO activity in the area continues to promote the concept in their normal daily activities.</p>																																																														
<b>Potential ethical issues</b>	<p>Poisons in one location and key known by at least one key holder may increase access by indicating to everyone where all the pesticides are located</p> <p>Non active farmers (i.e. non box holders) may request attention and cause local disharmony</p> <p>Perception of industry support to increase profits</p>																																																														
<b>EVALUATION</b>																																																															
Background monitoring	<p>1) Demographic characteristics of community (education, income, neonatal death rate, etc.) including total annual volume of pesticides sold with breakdown by type of pesticide.</p> <p>To be detailed</p> <p>2) Community rates of suicide and attempted suicide with breakdown by method (including specific type of pesticide – available data to be provided).</p> <p style="text-align: center;"><b><u>TOTAL ACTS OF SUICIDE AND ATTEMPTED SUICIDE</u></b>  <b><u>In Thanamalwila, Lunugamvehera &amp; Tissamaharama</u></b>  <b>(from Hospital &amp; Police Records)</b>  <b>2000 – 2006</b></p> <table border="1" data-bbox="523 1704 1375 2007"> <thead> <tr> <th rowspan="2">YEAR</th> <th colspan="2">THANAMALWILA</th> <th colspan="2">LUNUGAMVEHERA</th> <th colspan="2">TISSAMAHARAMA</th> </tr> <tr> <th>Attempts</th> <th>Deaths</th> <th>Attempts</th> <th>Deaths</th> <th>Attempts</th> <th>Deaths</th> </tr> </thead> <tbody> <tr> <td>2000</td> <td>37</td> <td>11</td> <td>37</td> <td>10</td> <td>198</td> <td>38</td> </tr> <tr> <td>2001</td> <td>53</td> <td>15</td> <td>45</td> <td>8</td> <td>131</td> <td>24</td> </tr> <tr> <td>2002</td> <td>57</td> <td>7</td> <td>57</td> <td>9</td> <td>194</td> <td>17</td> </tr> <tr> <td>2003</td> <td>66</td> <td>7</td> <td>55</td> <td>5</td> <td>239</td> <td>30</td> </tr> <tr> <td>2004</td> <td>76</td> <td>8</td> <td>46</td> <td>7</td> <td>200</td> <td>24</td> </tr> <tr> <td>2005</td> <td>116</td> <td>9</td> <td>42</td> <td>8</td> <td>246</td> <td>28</td> </tr> <tr> <td>2006</td> <td>106</td> <td>14</td> <td>59</td> <td>5</td> <td>274</td> <td>19</td> </tr> </tbody> </table> <p>* “Attempts” includes all suicidal acts</p>	YEAR	THANAMALWILA		LUNUGAMVEHERA		TISSAMAHARAMA		Attempts	Deaths	Attempts	Deaths	Attempts	Deaths	2000	37	11	37	10	198	38	2001	53	15	45	8	131	24	2002	57	7	57	9	194	17	2003	66	7	55	5	239	30	2004	76	8	46	7	200	24	2005	116	9	42	8	246	28	2006	106	14	59	5	274	19
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	<p>3) Community rates of fatal and non-fatal accidental or work-related pesticide poisoning with breakdown by specific type of pesticide- available for 2005/2006/2007.</p> <p>4) Annual survey of randomly selected community households to determine:</p> <p>(a) types and amount of pesticides available in homes (list is available), purchased in village hardware shop and closest township and method of currently stored: buried or hidden in field or home garden; inside house or kitchen outhouse;</p> <p>(b) knowledge by local experience and local knowledge of usage, storage and disposal of container. They have some knowledge of health risks but not necessarily the gravity of misuse. Common knowledge of and first aid essentials management of the acute toxic effects and would seek immediate medical help from township hospital.</p>
Control group	Identified is a matched community with similar rates of pesticide-related suicide and attempted suicide that does not institute a household pesticide lockbox programme.
Primary outcomes	<p>1 Rates of fatal and non-fatal pesticide poisoning (suicide, attempted suicide, accidental poisoning).</p> <p>2 Methods of suicide and attempted suicide.</p> <p>3 Methods of storage and disposal of pesticides in community households.</p> <p>4 Cost-effectiveness of the intervention (per prevented suicide and per prevented attempted suicide) – not considered at this stage but can be calculated.</p>
Secondary outcomes	<p>1 Per cent of households with locked boxes that use them appropriately;</p> <p>2 Per cent of households who install locked boxes on own (not provided by the study);</p> <p>3 Per cent of suicide and attempted suicide and accidental use of pesticides stored in the locked boxes.</p>
Process measures	<p>1 Acceptability of lockboxes.</p> <p>2 Willingness to pay for lockboxes.</p> <p>3 Willingness to accept two key system.</p> <p>4 Willingness to share information with other members in the village and neighbouring villages.</p> <p>5 Willingness to share information with other members in neighbouring villages.</p> <p>6 Willingness to conform to an acceptable and safe method of disposal of pesticide containers.</p>
Instruments/scales	<p>1 Annual household survey about pesticide storage and knowledge of community members from baseline data and follow up interviews;</p> <p>2 Documentation assessing usage of the lockboxes by the assigned households;</p> <p>3 Documentation for assessing costs associated with the programme.</p>
Timing of evaluation	Baseline, at six months and 12 months after installing locked boxes and then annually thereafter.

<b>CENTRALIZED COMMUNAL STORAGE OF PESTICIDES, INDIA</b>	
<b>Rationale</b>	Limiting access to toxic means prevents their use in suicidal behaviour.
<b>Evidence of effectiveness</b>	No evidence but has advantages over placing locked boxes in individual households because ALL households are involved (not just those with locked boxes), there is another level of supervision over the access to the pesticides.
<b>Cost-effectiveness</b>	Needs to be assessed.
<b>Target group(s)</b>	Communities that have high rates of pesticide-related suicides and attempted suicides. Areas of India with high suicide rates. 2-3 Villages (entire community or at least 90% if some decline to participate) of 150-200 households, population of about 3000, purposeful selection. Control villages randomly selected from villages matched for with similar characteristics – socio-demographic profile and suicidal behaviours, in same region but not neighboring villages. Potential areas: Wayanad in Northern Kerala and Vidarbha Region of Maharashtra.
<b>Key stakeholders</b>	Farmers, community leaders, local government (block development officers and their staff), police, health authorities, primary health care workers, teachers, native healers, alternative medicine practitioners, agricultural authorities, religious leaders, pesticide retailers, NGOs: MSSRF and Shreyas and others.
<b>Activities</b>	<p>1) Discussion with community leaders, key stakeholders and pesticide end users to identify which method of communal storage would be most acceptable and feasible in the community. The models vary along a continuum of low to high autonomy for the individual farmer: (a) a centralized location for pesticide storage in the village where each farming family has its own locker that they can access at any time; (b) a centralized storage where lockers are housed in a secure location that has to be opened by a 'manager' before a family can get access to its own pesticide locker; (c) centralized storage of pesticides with individual lockers for each household but only manager has direct access to pesticides, on request from end user manager dilutes amount of pesticide end user plans to use in the current day; (d) centralized purchase/distribution of pesticide in each village by a single authorized (or licensed) distributor who provides pre-application diluted form of pesticide to end user for use in current day (like in the old commune system in China).</p> <p>2) Establish the centralized storage facility and identify and train the manager(s) for the facility. The design and construction of the facility and the selection of a managers (at least 2) (e.g., a woman widowed by suicide in the past) should be done with as much local involvement as possible. Managers must be available very early in the morning to allow for easy access by farmers when needed. The training of the manager should include information on the need for safe storage, and use the SUPRE-MISS model of Brief Intervention and Contact to train on suicide, the access procedures and reporting requirements, as well as local resources to refer individuals who experience difficulties and how to conduct successful referrals.</p> <p>3) Promote the utilization of the communal storage throughout the community. Key stakeholders will be employed to describe the importance and value of the centralized storage and encourage its use. Public meetings or forums may be held. People who do not participate will be visited individually.</p> <p>4) Use the communal storage to dispose of unwanted pesticides or to re-sell pesticides to other farmers and dispose of empty containers.</p> <p>5) Identify a field project supervisor to monitor the system (employed by</p>

	the project leaders) to Monitor the use of the communal storage and ensure that there is a mechanism for soliciting feedback about the new system and for rapidly dealing with complaints. A village elder or similarly respected person from the community, a local agricultural extension worker and a local NGO representative should be identified as persons to contact with complaints, difficulties or suggestions.
<b>Resource needs</b>	Personnel to develop evaluation and implementation protocols. Personnel to contact key stakeholders to develop support for the project. Funds to build and maintain centralized storage facility; managers for facility (may need to be paid); salary of field project supervisor, personnel to conduct public promotion and to deal with complaints of users of the storage facility. Personnel to gather evaluation data, code and enter data, analyze the data and write and disseminate findings.
<b>Sustainability</b>	Depends on acceptability to community and enthusiasm of local government and/or NGOs who promote the effort.
<b>Potential ethical and practical issues</b>	Decreased autonomy of individual farming families, inconvenience to farmers, possibly less profit for retailers if pesticides are purchased in bulk, change in power structure within the community, potential abuse of power by paid managers.
<b>EVALUATION</b>	
Baseline information	<p>1) Demographic characteristics of community (religions, male-female population, percentage farming households, crops cultivated, literacy rate, income, neonatal death rate, etc. to the extent that community data are available) including total annual volume of pesticides sold with breakdown by type of pesticide.</p> <p>2) Community rates of suicide and attempted suicide with breakdown by method (including specific type of pesticide) from primary health centre, police records, private practitioners, community leader reports over past 2 years.</p> <p>3) Community rates of fatal and non-fatal accidental or work-related pesticide poisoning with breakdown by specific type of pesticide.</p> <p>4) Baseline survey of 50 randomly selected community households in each of the experimental and control communities to determine (a) types and amount of pesticides available in homes (if any), location of purchase, and method of storage; and to determine (b) community members' knowledge about appropriate use, storage and disposal of pesticides, about the health risks of pesticide use, and about the recognition and first aid management of the acute toxic effects of pesticide poisoning. (Base questionnaire on instruments used in Sri Lanka studies)</p> <p>Note: It would be ideal to survey all community households, but this may not be feasible, although we would explore the possibility of a simplified questionnaire administered by local individuals or organizations.</p>
Control group	Matched community with similar rates of pesticide-related suicide and attempted suicide, similar crops grown, similar community demographics, from the same region but not neighboring villages, that do not institute a communal pesticide storage programme.
Primary outcomes	<p>1) Rates of fatal and non-fatal pesticide poisoning (suicide, attempted suicide, accidental poisoning).</p> <p>2) Methods of suicide and attempted suicide.</p> <p>3) Methods of storage and disposal of pesticides in community households.</p> <p>4) Cost-effectiveness of the intervention (per prevented suicide and per prevented attempted suicide)(direct costs).</p> <p>5) Community acceptance of communal storage</p> <p>6) Knowledge about health risk, safe use, storage and disposal of pesticides</p>

Secondary outcomes	Per cent of fatal and non-fatal pesticide ingestions (accidental and suicidal) that used pesticides stored in the communal facility.
Process measures	<ol style="list-style-type: none"> <li>1) Focus groups on the level of acceptability of the new storage method and about problems users have faced in implementing the new system.</li> <li>2) Monitoring of management of communal storage facility (e.g., How many of the individual lockers are actually used? Are lockers clearly marked and locked? Is the overall facility locked at all times? etc.)</li> <li>3) Complaints received.</li> <li>4) Patterns of use of communal storage (when, how often, amounts used, who obtained pesticides)</li> <li>5) Referrals given and nature of problems</li> <li>6) Difficulties encountered in gaining acceptance and how acceptance was facilitated (what occurred in community meetings)</li> <li>7) Changes in community cohesion (before-after)</li> <li>8) Amount spent on pesticides before and after communal storage</li> </ol>
Instruments/scales	<p>1. BASELINE DATA:</p> <p>A. COMMUNITY:</p> <p>Socio-demographic data from local government, census department and local informers: religions, male-female population, percentage farming households, crops cultivated, literacy rate, income, neonatal death rate, etc. to the extent that community data are available</p> <p>Pesticide use from local informers (retailers, agricultural officers, community leaders): including total annual volume of pesticides sold with breakdown by type of pesticide. When pesticides are used for specific crops, by season. Also include community cohesion questions with community informers.</p> <p>Suicidal behaviours and accidental poisonings from primary health centre, police records, private practitioners, community leader reports over past 2 years.</p> <p>B. HOUSEHOLD SURVEY from Key Informant (other informants when possible)</p> <p>Socio-demographic data: (age, gender, religion, number of people in household and relationships, farming practices (crops, amount of cultivated land), income, debts, other sources of household income, stressors</p> <p>Pesticide data: Amounts used, purchased, stored, types, disposal of unused and containers, knowledge about pesticide storage, use and risks.</p> <p>Suicidal behaviours: family history of suicides, attempts, ideation, accidental poisonings, attitudes, mental health and alcohol use</p> <p>Community cohesion</p> <p>2. INTERVENTION PHASE</p> <p>FOCUS GROUPS</p> <p>With key stakeholders to determine type of community storage to develop, issue in acceptability and implementation and best practices in community storage.</p> <p>MONITORING OF IMPLEMENTATION AND USE</p> <p>Register of patterns of use of communal storage to be obtained month from managers by field project officer (Patterns of use of communal storage (when, how often, amounts used, who obtained pesticides, How many of the individual lockers are actually used? Are lockers clearly marked and locked? Is the overall facility locked at all times? etc.)</p> <p>Register of complaints received and how they were resolved obtained monthly by field project officer.</p> <p>Referrals given and nature of problems from interviews with managers conducted monthly by field project officer</p> <p>Interviews with key community informers and reports from field project officers on difficulties encountered in gaining acceptance and how acceptance was facilitated.</p>

	<p>3. POST-INTERVENTION PHASE</p> <p>A. COMMUNITY:  Pesticide use from local informers (retailers, agricultural officers, community leaders): including total annual volume of pesticides sold with breakdown by type of pesticide.  Suicidal behaviours and accidental poisonings from primary health centre, police records, private practitioners, community leader reports over past two years. Also include community cohesion questions with community informers.</p> <p>B. HOUSEHOLD SURVEY from Key Informant (other informants when possible)  Pesticide data: Amounts used, purchased, stored, types, costs, disposal of unused and containers, knowledge about pesticide storage, use and risks.  Suicidal behaviours: suicides, attempts, ideation, accidental poisonings, attitudes, mental health and alcohol use.  Community cohesion.</p> <p>C. FOCUS GROUPS  Acceptability of communal storage; issues and problems encountered and how resolved, suggestions for improvement.</p>
Evaluation	<p>Baseline and 12 months after setting up communal storage and then annually thereafter, with monitoring during intervention phase and continually thereafter. Length of follow-up to be determined by resources.</p>

**COOPERATIVE PURCHASE AND COMMUNAL DISTRIBUTION OF PESTICIDES AT VILLAGE LEVEL, CHINA**

<p><b>Synopsis</b></p>	<p>This three-year project will assess the feasibility and effectiveness in reducing suicides and attempted suicides of a major change in the method of sale and storage of pesticides in rural China. In 20-30 target villages with high rates of pesticide-ingestion suicides the sale of pesticides to individual farmers will be gradually phased out and replaced with village-based cooperative purchase and communal storage of pesticides. Active promotion of the new system and financial incentives (reduced price for pesticides) will be employed to encourage full participation, and on-going monitoring will assist in resolving difficulties farmers encounter when using the system. A comprehensive registry system for completed and attempted suicides - the main outcome measures for the project - will be developed in the target communities and in control communities with similar characteristics. If successful, the programme will be up-scaled and government officials will be encouraged to implement relevant policies.</p>
<p><b>Rationale</b></p>	<p>Limiting home access to toxic means prevents their use in suicidal behavior and, thus, decreases both the incidence and case-fatality of acts of deliberate self-harm.</p>
<p><b>Evidence of effectiveness</b></p>	<p>Currently no evidence of effectiveness.</p>
<p><b>Cost-effectiveness</b></p>	<p>Construction costs are limited to building one or two storage sites per village. After the initial information campaign to get local end users to participate in the programme, long-term personnel costs will be largely limited to salary support for the 2-3 individuals per village who supervise the distribution of the pesticides and for individuals who regularly monitor and 'police' compliance with the programme. The cost of pesticide purchases should be lower because the central storage facility could purchase in bulk. If, however, financial incentives are needed to ensure compliance of end-users (e.g., selling the pesticides at substantially reduced prices) this would increase the cost of the programme by a corresponding amount.</p>
<p><b>Target group(s)</b></p>	<p>This programme will take three years to develop, implement and evaluate. We have 25 villages from one intervention township (a total of 10,000-15,000 residents) and 25 villages from one comparable control township. Communities that have high rates of pesticide-related suicides and attempted suicides will be selected.</p>
<p><b>Key stakeholders</b></p>	<p>Agricultural authorities and governmental business administration officials (at provincial and county level), farmers, community leaders, local government, health authorities, police, and NGOs (particularly those concerned with suicide and pesticide management).</p>
<p><b>Activities</b></p>	<p>1) Negotiate with local and regional agricultural authorities and government officials about the feasibility of pilot-testing a changed method of distributing pesticides. [The potential benefits of this change will include decreased intentional and unintentional poisonings and environmental degradation, lower costs for farmers, greater ability for authorities to restrict the types of pesticides used to an approved (minimum) pesticide list, and so forth.] The model system would encourage local residents and government officials to identify one or two individuals who are authorized (or licensed) distributors. Ideally the distributors will provide pre-application diluted form of pesticides to end users for application on the day of purchase; but if this proves impractical (due to distance from the fields, lack of local water supply, etc.) it may be necessary to provide concentrated forms of pesticides and require same-day return of the container. To decrease long waiting lines at the time of peak pesticide application, farmers would be expected to inform facility managers of their requirements the day prior to the purchase; that way the manager could prepare the diluted form</p>

	<p>of the pesticide in the early morning before farmers start their applications. The specific list of compounds purchased cooperatively and stored communally could be determined locally (in coordination with the county-level agricultural official), but it should definitely include all pesticides commonly used in suicides. In the intervention communities this will also mean working with current distributors to phase-out (and eventually ban) sale of pesticides to individual farmers over a 3-6 month period. Similarly, the home-storage of pesticides will be phased-out (and eventually banned) over a 6-12 month period.</p> <ol style="list-style-type: none"> <li>2) Conduct the baseline assessment (situation analysis) of the intervention and control communities that includes suicide rates and methods over the prior two years, assessment of current farming practices, the supply network for pesticides, local methods of pesticide use and storage, and so forth.</li> <li>3) Institute the monitoring system for completed suicide and attempted suicides engaging (and training) village doctors and staff in the emergency departments of local hospitals to report fatal and non-fatal suicidal behavior using a standardized report form. These reports will be collected and collated monthly by the local (township) Centers for Disease Control office.</li> </ol>
	<ol style="list-style-type: none"> <li>4) Construct the centralized storage facilities in the villages and identify and train the manager(s) for the facility. The design, location and construction of the facility and the selection of a manager (e.g., a retired farmer) should be done with as much local involvement as possible. The training of the manager should follow the model described for training retailers (described in the WHO booklet on 'Safer Access to Pesticides').</li> <li>5) In each village identify one person who will be the 'ombudsman' for the programme. His/her responsibility will be to solicit and address problems with the new pesticide distribution system, organize and supervise the local promotion effort, monitor and enforce compliance by pesticide distributors and farmers, and supervise the evaluation processes for the project. The goal will be to have the local community identify this person, but the PI for the project will specify certain characteristics/skills that the selected individual should possess.</li> <li>6) Identify all locations where local end-users are currently purchasing pesticides and require these sellers to stop sales to farmers; some large distributors will be identified who can sell large volumes of pesticides (at reduced prices) to the identified distributor(s) in each village. In some cases where local villagers are already distributors, they may, with the agreement of the community leaders, be chosen to become the manager(s) of the centralized storage facility.</li> <li>7) Promote the utilization of the communal storage and distribution system throughout the community and educate community members about safe usage and storage of pesticides. A variety of media should be employed to describe the importance and value of the centralized storage. Financial incentives such as reduced prices (20%-30%) for most pesticides could be used in the initial phases of the programme.</li> <li>8) In the intervention communities monitor the use of the communal storage and ensure that there is a mechanism for soliciting feedback about the new system and for rapidly dealing with complaints. Every six months a community survey (possibly by the township agricultural official, the village doctor or some other widely respected community official) will conduct a survey of 50 randomly selected households in each village to assess the proportions of households that still store pesticides, the methods of storing the pesticides, the reasons some farmers are still storing pesticides in their homes (and their ideas about what would encourage their participation in the communal storage programme), and the degree to which it is still possible for individual farmers to purchase concentrated pesticides for home storage.</li> </ol>

	<p>[Eventually it may become necessary to use legal measures (fines) against distributors and farmers who refuse to comply with the new regulations.] At the beginning of the programme these 'evaluators' will be identified by community leaders and trained in the use of the evaluative instruments by project PI and his/her staff.</p> <p>9) Assess cost of building and managing the storage facility, salary support for the facility manager and official(s) who monitor the programme, local promotion of the programme, and (possibly) subsidizing the cost of the pesticides.</p> <p>10) Monitor all intentional and unintentional pesticide ingestions (fatal and non-fatal) in the intervention and control communities and identify where the subject obtained the ingested pesticide.</p> <p>11) Conduct the data analysis and write-up of the results.</p>
<b>Resource needs</b>	<p>Funds to 1) build and maintain centralized storage facility; 2) salary support for the manager of the facility; 3) salary support for personnel to conduct public promotion, monitoring, and to deal with complaints of users; and 4) (potentially) subsidies to decrease the cost of pesticides to the end-user. In addition to the local staff (described above) suicide prevention personnel (the project PI and his/her associates) will need to develop 1) training materials for identified facility managers, 2) reporting instrument for village doctors and emergency room personnel; 3) promotion materials to encourage active community participation the programme, 4) evaluative instruments for the three-monthly assessments of compliance with the programme.</p>
<b>Sustainability</b>	<p>Explicit support from different governmental agencies will be needed to implement this intervention because it involves a major change in the method of sale of pesticides. The success of the intervention also requires the willingness of end-users to use the communal storage method, which will inevitably means some inconvenience. Assuming that the initial pilot study is successful, local sustainability will depend on whether or not the perceived benefits clearly outweigh the disadvantages from the perspective of both the government and end-user participants. Up-scaling the programme will require convincing higher levels of government to make the necessary policy changes permanent. Long-term participation and monitoring of the programme by WHO officials would be rendered more feasible if the success of the programme is included as one of the 'performance criteria' for local officials.</p>
<b>Potential ethical issues</b>	<p>Decreased autonomy of individual farming families, inconvenience to farmers, change in power structure within the community, potential abuse of power by paid manager, putting small-scale distributors out of business, legal challenges with distributors who refuse to stop selling pesticides to individual farmers, potential use of fines for farmers who continue to store pesticides in the home, (adding to their financial burden).</p>
<b>Budget</b>	<p>An initial 'situation analysis' to assess the feasibility of doing such a project will cost \$5,000 (\$US). Assuming that the main study can be conducted in sites that we (the Beijing Suicide Research and Prevention Center) already have ongoing studies at, the cost for the main project will be in the range of \$50,000 to \$70,000 over the three years. The distribution of costs over the three years would be \$30,000, \$20,000, \$20,000.</p>
<b>EVALUATION</b>	
<b>Background monitoring</b>	<p>1) Demographic characteristics of community (education, income, neonatal death rate, etc.) including total annual volume of pesticides sold with breakdown by type of pesticide.</p> <p>2) Community rates of suicide and attempted suicide with breakdown by method (including specific type of pesticide and, if possible, location the pesticide was obtained from). This information is compiled from mortality data available at the township and county-level Centers for Disease Control, from the emergency departments of all local general hospitals (and regional hospitals that may be used by local residents),</p>

	<p>and from monthly reports of village doctors (who often treat suicide attempts that do not get to the general hospital).</p> <ol style="list-style-type: none"> <li>3) Community rates of fatal and non-fatal accidental or work-related pesticide poisoning with breakdown by specific type of pesticide.</li> <li>4) Annual survey of randomly selected community households (from both intervention and control communities) to determine a) types, amount, location of purchase, and method of storage and disposal of pesticides available in homes (if any); and b) to determine community members' knowledge about appropriate use, storage and disposal of pesticides, about the health risks of pesticide use, and about the recognition and first aid management of the acute toxic effects of pesticide poisoning.</li> </ol>
Control group	Matched communities with similar rates of pesticide-related suicide and attempted suicide that do not institute a communal pesticide storage programme.
Primary outcomes	<ol style="list-style-type: none"> <li>1) Rates of fatal and non-fatal pesticide poisoning (suicide, attempted suicide, accidental poisoning).</li> <li>2) Number and methods of ALL types of suicide and attempted suicide.</li> <li>3) Methods of storage and disposal of pesticides in community households</li> <li>4) Cost-effectiveness of the intervention (per prevented suicide and per prevented attempted suicide).</li> </ol>
Secondary outcomes	Percent of fatal and non-fatal pesticide ingestions (accidental and suicidal) that used pesticides stored in the communal facility.
Process measures	<ol style="list-style-type: none"> <li>1) At end of each of the three years of the programme, focus groups with facility managers (2 groups), local evaluators (two groups) and end-users (one group in each village) will be used to assess the acceptability of the new storage method and to identify the problems that users have faced in implementing the new system.</li> <li>2) Three-monthly surveys of the household storage and usage of pesticides and of the locations of local sales of pesticides in the intervention communities will determine the extent to which the communal storage is being implemented will be used to fine-tune the activities of the intervention throughout the three-year study.</li> </ol>
Instruments/scales	<ol style="list-style-type: none"> <li>1) Background information Form for the baseline assessment.</li> <li>2) Three-month community survey on pesticide storage, use and sale in the intervention communities.</li> <li>3) Annual household survey about pesticide storage, attitudes and knowledge of community members in both the intervention and control communities</li> <li>4) Focus group outlines to assess acceptability of communal storage in intervention communities</li> <li>5) Register for attempted suicide to be completed by village doctors and/or emergency departments of general hospitals.</li> </ol>
Timing of evaluation	Community surveys, focus groups and assessment of suicidal behaviors will be conducted at baseline and 12, 24 and 36 months after starting the communal storage programme. There will also be regular (every six months) monitoring of the storage, use and sale of pesticides in the target communities.

**COMMUNITY-WIDE EDUCATIONAL AND PROMOTIONAL EFFORT TO RAISE AWARENESS ABOUT THE HEALTH RISKS ASSOCIATED WITH PESTICIDE USE AND TO ASSIST IN THE DEVELOPMENT OF COMMUNITY-SPECIFIC METHODS FOR ENHANCING SAFE USE, STORAGE AND DISPOSAL OF PESTICIDES, CHINA**

<p><b>Synopsis</b></p>	<p>This three-year project will encourage all potential stakeholders from 20 villages in one township in rural China with high pesticide-ingestion suicide rates to become actively involved in an awareness campaign and in the development of community-specific programmes to improve the safety of pesticides. In the first six months focus groups with a wide variety of stakeholders will generate ideas about township-level and village-level awareness raising activities and about specific community level interventions that could be undertaken in the last 18 months of the project for \$1,000 (\$US) per village. After analysis of the focus group results, the awareness-raising campaign will start and will include active community discussion of the various township- and village- specific interventions recommended by the focus groups; selection of specific prevention activities to be undertaken in the last 18 months of the project in each village will, as much as possible, be a community-wide process. In the last 18 months the awareness-raising activities will continue and will include promotion of the specific intervention(s) undertaken in each community. The fidelity with which the activities follow the proposed plan and produce the desired behavioral results will be evaluated. The overall outcome of the awareness raising and community-developed interventions will be assessed based on comparison of suicide and attempted suicide rates in the intervention and control communities. Focus groups at the end of the third year in the intervention community will identify strengths and weakness of the awareness-raising campaign and of the specific community-level interventions. Recommendations for government support of similar programmes will be developed based on the results.</p>
<p><b>Rationale</b></p>	<p>Appropriately organized educational and promotional activities have the potential for changing attitudes about the management of pesticides and, thus, the actual methods of storage and use. In rural communities interventions that actively engage the local community are more likely to be effective than externally generated and 'imposed' interventions. Given the complexity of the problem of pesticide-ingestion suicide, a multi-sector awareness raising and intervention that involves as many community members as possible is more likely to result in reduced pesticide-related suicides than an intervention focused on only one type of community member.</p>
<p><b>Evidence of Effectiveness</b></p>	<p>Comprehensive awareness-raising campaigns focused on depression have been effective in reducing suicides in Germany, but the relevance of this to rural agricultural communities is uncertain. There is some evidence of effectiveness of farmer training to improve safe storage from non-randomized trials in Nicaragua. Research on the sale of alcohol, tobacco, and firearms confirms the value of a retailer-focused intervention strategy to limit access to restricted products. And there is evidence from studies of HIV infection that training children can change parental behavior</p>
<p><b>Cost-effectiveness</b></p>	<p>No evidence</p>
<p><b>Target groups</b></p>	<p>The community at large is the target group but activities will also be focused on specific target groups: farmers, local government leaders, community resource persons/opinion leaders, pesticide distributors, health workers, media, women's federation cadres, school children, and so forth.</p>

<b>Key stakeholders</b>	Township and village leadership groups; specific government departments (public health, agriculture, environmental control, education, propaganda (information)); and the women's federation.
<b>Activities</b>	<ol style="list-style-type: none"> <li>1) Two townships with high pesticide-ingestion suicide rates will be identified; one of the townships will be randomly selected as the 'intervention community' and one as the 'control community' and then 20 geographically contiguous villages from each township will be selected to participate in the project.</li> <li>2) Negotiations between project staff (the PI and his/her assistants) and township officials will identify a 'coordination group' at the township level. In the control township this will probably only involve the public health officials but in the intervention township this will include at least 4 or 5 individuals from different sectors (e.g., the women's federation and the departments of public health, agriculture, environmental protection, education, propaganda (information) department, etc.). Then for each village an 'action group' that will coordinate the activities of the initiative will be recruited. In the control villages this will probably be limited to the village doctor or some other official, but in the intervention village it will include at least 4 persons (village head of vice-head, women's cadre, village doctor, well-respected farmer, etc.)</li> <li>3) Institute a monitoring system in the target communities for completed suicide and attempted suicide engaging (and training) village doctors and staff in the emergency departments of local hospitals to report fatal and non-fatal suicidal behavior using a standardized report form. These reports will be collected and collated monthly by the local (township) Centers for Disease Control office.</li> <li>4) A baseline assessment of the 40 target villages will be conducted that includes suicide rates and methods over the prior two years; assessment of current farming practices, the supply network for pesticides, local methods of pesticide use and storage; community attitudes about suicide, the prevalence of other risk factors for suicide, and so forth. This will involve face-to-face interviews with informants from a random selection of 50 households from each village (total of 2000 interviews in the intervention and control townships).</li> <li>5) In the first six months staff from the Beijing Center will work with local coordinators to conduct a total of 25 focus groups with potential stakeholders (farmers, local government leaders, community resource persons/opinion leaders, distributors, health workers, media, women's federation cadres, school children, etc.) in the intervention township. In the first 30 minutes group members will be asked to identify potential health risks of pesticides and then participate in an interactive discussion in which the focus group coordinators present current knowledge about the health and other risks associated with pesticide use. The last 60 minutes of the focus group will discuss: <ol style="list-style-type: none"> <li>i. how best to increase target group-specific (i.e., farmers, government leaders, etc.) and community-wide awareness of the problem;</li> <li>ii. potential target-group specific and community-wide interventions (at both the township and village level) lasting for 12-18 months that could be accomplished within a budget of \$1,000 (\$US) per village (not including external technical assistance); and</li> <li>iii. how best to encourage the active participation of each target group and the community at large in the suggested solutions.</li> </ol> </li> <li>6) The focus groups will be analysed (months 6-8 of the project) to identify the type of information needed in educational materials for the different target groups (farmers, distributors, health workers, primary and secondary students, etc.), the different potential methods for transmitting this information, and the range of township-level and</li> </ol>

	<p>village-level interventions that are considered feasible. Using these results, staff at the Beijing Center will work with the township and village coordinators to develop target group-specific educational and promotional materials.</p> <ol style="list-style-type: none"> <li>7) From month 9 to 18 of the project the awareness-raising methods suggested in the focus groups will be employed to actively engage every sector of the community in the campaign and to transmit the educational message. The educational materials and promotional methods will be revised as experience with their use increases. Media expertise will be solicited in maximizing the effectiveness of the promotion campaign and attempts will be made to identify and recruit local celebrities to help in the promotion effort. To increase enthusiasm about the process all community members will be encouraged to participate in discussing and selecting township and village-specific methods for making the best use of the \$1,000 per village that will be provided in the last 18 months of the project. The suggestions raised by the focus group will be presented but it will also be possible to consider other interventions. For example, there could be an essay competition for middle school and high school students to discuss the merits and drawbacks of the different recommended proposals (or to propose their own intervention) that would then be presented at an award ceremony where a high-profile celebrity gave the awards to the best essays.</li> <li>8) At the end of the first 18 months the township and village coordinating groups will make their choices about which activities they will undertake in the last half of the project. Some of the funds will go to township-level activities (that cover all villages) and some will be allocated for village-specific activities. Ideally this process could be as transparent as possible and involve 'community-meeting' types of discussions. For each specific intervention, the technical group at the Beijing Center will provide assistance in determining specific process measures (including assessment of activities and changed behaviors), and the best way to administer the funds as these proposed activities are completed.</li> <li>9) In the second 18 months of the project the awareness raising educational activities will continue and the township-wide and village-specific interventions will be implemented. All interventions will include a promotion component that will be piggy-backed onto the ongoing awareness activities. The fidelity of the implementation of specific projects will be monitored by the local personnel (who have been trained by the technical group for the project) based on the project-specific process measures. Technical staff from the Beijing Center will also independently assess the progress of each intervention project at month 24, month 30, and month 36 of the 36-month initiative.</li> <li>10) The frequency, variety, and the number and type of participants in the different awareness-raising and promotional events that occur over the entire three years of the programme will be recorded by the local project coordinators.</li> <li>11) Surveys of randomly selected community households (from both intervention and control communities) will be conducted at months 18 and 36 of the programme to determine a) types, amount, location of purchase, and method of storage and disposal of pesticides used by households; and b) to determine community members' knowledge about the appropriate use, storage and disposal of pesticides, about the health risks of pesticide use, and about the recognition and first aid management of the acute toxic effects of pesticide poisoning.</li> <li>12) In the final survey (item 10) a series of questions will be included for those in the intervention villages to assess their awareness of, level of participation in, and evaluation of the community-wide promotion campaign and the village-specific intervention(s). At the end of the</li> </ol>
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	<p>third year staff from the Beijing Center will also conduct focus groups with the key implementers of the intervention projects and other key informants at the township and at each village (42 groups) to assess their perceptions of the strengths and weakness of the awareness-raising campaign on of the specific intervention projects.</p> <p>13) The costs of the entire three-year initiative and of the different interventions implemented in the second half of the project will be recorded in detail (excluding costs for external monitoring).</p> <p>14) Throughout the three years and (if possible) for subsequent years all intentional and unintentional pesticide ingestions (fatal and non-fatal) in the intervention and control communities will be identified and the location the subject obtained the ingested pesticide will be recorded.</p> <p>15) Conduct the data analysis and write-up of the results with a detailed discussion of the strengths and weaknesses of the educational/promotion activities and of the various interventions undertaken by the communities.</p> <p>16) Return to the community to give presentations on the results to get their feedback on the interpretation of the findings.</p> <p>17) Based on the cost-benefit of the initiative, encourage provincial-level governments to support similar community-centered initiatives in different locations.</p>
<p><b>Resource needs</b></p>	<p>Despite being a community-based project with heavy community involvement, the technical staff requirements are substantial. Technical staff from the Beijing Center will be needed to 1) conduct and analyse focus groups, 2) development and make on-going revisions of educational and promotional materials for different target groups; 3) conduct baseline and 18-month and 36-month community surveys, 4) assist in the development of process measures for the township-level and village-level interventions and in the training and monitoring of local personnel who conduct the assessments, 5) monitor the budget of each of the individual projects, and 5) analyses and write-up of the results. The Beijing Center has expertise in doing all of these activities, but it will require significant staff time to accomplish these activities.</p> <p>At the local level there will need to be identified ‘activists’ in each village who actually get invested in implementing the awareness-raising campaign and the subsequent intervention project. There are typically several potential individuals at each level, so it should be possible to identify 2-3 per village. A small remuneration for their participation will be needed.</p> <p>The costs of the specific interventions will need to be covered by the \$1000 per village budget, though technical support provided by the Beijing Center will not be included in these budget.</p>
<p><b>Sustainability</b></p>	<p>Since this really is a community-generated programme, the sustainability will, to a large extent, depend on the amount of enthusiasm about the programme generated in the community. The funding requirements for the awareness-raising are relatively modest so this will probably be sustained as long as there is local interest. The overall goal of the project is to assess the effectiveness of a rural educational/awareness-raising campaign that includes one component which is unique to each village (the intervention funded by the \$1000); the main goal of including the different specific interventions is to see if giving villages funds and technical support to conduct such an intervention enhances the effectiveness of education and awareness-raising NOT to determine the effectiveness of the different township and village-specific interventions themselves. Given the numbers of expected suicides and attempted suicides it will not be possible to assess the effectiveness of each intervention, but the qualitative assessment of some of the interventions is positive and if communities are enthusiastic about benefits of the intervention activities they have developed it should be possible to recruit</p>

	government support (and some matching funding) to continue the intervention(s) and to apply them in other communities. If these continuation and follow-up projects also produce positive outcomes, then the wide-scale promotion of the awareness-raising and community-developed initiatives (perhaps selected from a 'menu' of village-level projects that have proved most useful elsewhere in the previous studies) should be possible.
<b>Potential ethical issues</b>	We will need to be careful about the management of the funds that are sent directly to the villages.
<b>Budget</b>	We expect this project to cost a total of \$80,000 (\$US). The budget for the three years would be \$20,000, \$30,000 and \$30,000.
<b>EVALUATION</b>	
Background monitoring	<ol style="list-style-type: none"> <li>1) Demographic characteristics of community (education, income, neonatal death rate, etc.) including total annual volume of pesticides sold with breakdown by type of pesticide.</li> <li>2) Community rates of suicide and attempted suicide with breakdown by method (including specific type of pesticide).</li> <li>3) Community rates of fatal and non-fatal accidental or work-related pesticide poisoning with breakdown by specific type of pesticide.</li> <li>4) Surveys of randomly selected community households (from both intervention and control communities) will be conducted at baseline and at months 18 and 36 of the programme to determine a) types, amount, location of purchase, and method of storage and disposal of pesticides used by households; and b) to determine community members' knowledge about the appropriate use, storage and disposal of pesticides, about the health risks of pesticide use, and about the recognition and first aid management of the acute toxic effects of pesticide poisoning.</li> </ol>
Control group	Individuals and households in 20 villages from a matched township that do not participate in the awareness-raising activities of the community-specific intervention but have similar rates of pesticide-related suicide and attempted suicide.
Primary outcomes	<ol style="list-style-type: none"> <li>1) Rates of fatal and non-fatal pesticide poisoning (suicide, attempted suicide, accidental poisoning).</li> <li>2) Methods of suicide and attempted suicide.</li> <li>3) Change in level of knowledge of community members (and attitudes) about appropriate use, storage and disposal of pesticides.</li> <li>4) Actual methods of use, storage and disposal of pesticides in community households.</li> <li>5) Cost-effectiveness of the intervention (per prevented suicide and per prevented attempted suicide).</li> </ol>
Secondary outcomes	<ol style="list-style-type: none"> <li>1) List of proposed community-wide and target group-specific methods of increasing awareness about the dangers and appropriate use of pesticides; identification of the methods that were actually employed, and an assessment of the usefulness of the utilized methods as reported in the follow-up survey and focus groups</li> <li>2) List of all recommended township-level and village-level interventions for increasing appropriate use, storage and disposal of pesticide; identification of the interventions that were actually employed, and an assessment of the usefulness of the utilized methods as reported in the follow-up survey and focus groups.</li> </ol>
Process measures	<ol style="list-style-type: none"> <li>1) Completion of the 25 initial focus groups and the 42 focus groups at the end of the project.</li> <li>2) Production of target-group specific educational and promotional materials.</li> </ol>

	<ol style="list-style-type: none"> <li>3) Frequency, variety, and the number and type of participants in the different awareness-raising and promotional events that occur over the entire three years of the programme.</li> <li>4) Each township-level and village-level intervention conducted in the last 18 months of the project will have intervention-specific process measures that will be assessed both by local personnel and by staff at the Beijing Center. The specific measures employed will depend on the characteristics of the intervention; they will be defined once the specific interventions have been selected (at the mid-point in the 36-month project).</li> </ol>
Instruments/ scales	<ol style="list-style-type: none"> <li>1) Focus group outlines for the baseline and final focus groups.</li> <li>2) Community survey instrument to assess basic demographic information; incidence of common risk factors for suicide; farming practices; knowledge about appropriate method of use, storage and disposal of pesticides; actual method of use, storage and disposal of pesticides; and (for the final survey in the intervention village) level of awareness about, participation in and evaluation of the educational and promotional activities and the community-specific intervention activities.</li> <li>3) Recoding form for use by village doctors and medical personnel in local hospitals to report all fatal and non-fatal intentional and accidental poisonings with pesticides and all other types of deliberate self-harm.</li> <li>4) Forms to assess the process measures for the awareness-raising and promotional activities and for the community-specific interventions.</li> </ol>
Timing of evaluation	<ol style="list-style-type: none"> <li>1) Community-wide surveys (with a random selection of 50 households in each village in both the intervention and control communities) will be conducted at baseline, 18 months and 36 months.</li> <li>2) 25 baseline focus groups will be conducted in the first two months of the project and 42 evaluation focus groups will be conducted in months 33 to 36 of the project.</li> <li>3) Process measures of the awareness-raising and promotional events will be recorded at the time any such activities occur.</li> <li>4) Process of measures for the township-specific and village-specific interventions will be conducted no less than three times (at months 24, 30 and 36).</li> <li>5) Reports of attempted and completed suicide will be collated monthly by staff at the township level Centers for Disease Control.</li> </ol>

## Annex 3



# WORLD HEALTH ORGANIZATION

**Prevention of Suicidal Behaviours:  
Feasibility Demonstration Projects on Community  
Interventions for Safer Access to Pesticides  
5-7 December 2007  
Nonthaburi, Thailand**

## PROGRAMME

**Wednesday, 5 December 2007**

9:00-9:30	Welcome; Adoption of the agenda; Election of Chair and Rapporteur	J.M. Bertolote
9:30-10:00	Objectives of the meeting; The global public health initiative on Pesticides and Health; Review of the interventions identified during the First Consultation on Best practices on community action for safer access to pesticides	J.M. Bertolote A. Fleischmann
10:00-10:30	Experiences and findings from IASP pesticide initiatives	B. Mishara V. Scott
10:30-11:00	<i>Coffee break</i>	
11:00-12:30	Update of new findings and projects; Selection of interventions to conduct feasibility demonstration projects	All
12:30-14:00	<i>Lunch break</i>	
14:00-15:00	Selection of interventions to conduct feasibility demonstration projects	All
15:00-15:30	Detailed methodology to demonstrate the feasibility, including baseline assessments, monitoring and evaluation of the interventions selected	All
15:30-16:00	<i>Coffee break</i>	
16:00-17:00	Detailed methodology to demonstrate the feasibility, including baseline assessments, monitoring and evaluation of the interventions selected	All

### Thursday, 6 December 2007

9:00-10:30	Writing of a protocol for the implementation of the feasibility study of the interventions selected	All
<i>10:30-11:00</i>	<i>Coffee break</i>	
11:00-12:30	Writing of a protocol for the implementation of the feasibility study of the interventions selected	All
<i>12:30-14:00</i>	<i>Lunch break</i>	
14:00-15:30	Writing of a protocol for the implementation of the feasibility study of the interventions selected	All
<i>15:30-16:00</i>	<i>Coffee break</i>	
16:00-17:00	Writing of a protocol for the implementation of the feasibility study of the interventions selected	All

### Friday, 7 December 2007

9:00-10:30	Writing of a protocol for the implementation of the feasibility study of the interventions selected	All
<i>10:30-11:00</i>	<i>Coffee break</i>	
11:00-12:30	Management of activities: timetable and assignment of tasks throughout and following the feasibility project	All
<i>12:30-14:00</i>	<i>Lunch break</i>	
14:00-15:30	Strategies to disseminate and apply the findings of the feasibility project	All
<i>15:30-16:00</i>	<i>Coffee break</i>	
16:00-17:00	Conclusion and next steps; Closure	J.M. Bertolote

## Annex 4



# WORLD HEALTH ORGANIZATION

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## Prevention of Suicidal Behaviours: Feasibility Demonstration Projects on Community Interventions for Safer Access to Pesticides

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05 - 07 December 2007 - Nonthaburi, THAILAND

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