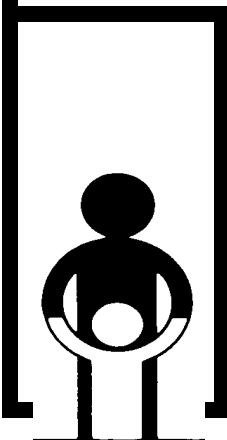


Disposal and Destruction of Syringes and Needles in Việt Nam and the Philippines

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Safe disposal and destruction of syringes and needles†:
The conclusions of a field trial of disposal and destruction methods (including
autocombustion incinerators) in Viêt Nam and the Philippines
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1. Introduction and background

Following the recommendations of the last Technet meeting (Manila 1996), WHO HQ/GPV and WPRO/EPI decided to conduct a field trial on the safe disposal and destruction of used syringes and needles in Viêt Nam and the Philippines. The trial was conducted in provinces where disposable syringes are used for EPI.

Objective of the trial†:

The objective was to evaluate the effectiveness, acceptability, cost and supervision/training burden of different methods for the collection, transportation and destruction of used syringes and needles.

Disposal systems tested†:

Two kinds of collection container were tested : Carton safety box (disposable by burning) and plastic safety box (re-usable).

Two kinds of incineration/burning were tested : Incineration of syringes and needles alone or in carton safety boxes in an auto-combustion incinerator (Sicim model), and incineration by burning in the open air (syringes and needles in safety boxes only).

Two kinds of transfer/transportation were tested : Transfer of the safety boxes to the district and transfer to the province.

All these tests were conducted in the same way in two provinces in each country.

Basic trial data†:

Population covered by the trial :	2,600,000 (Philippines)	1,800,000 (Viêt Nam)
Target population (EPI) :	80,000 (Philippines)	55,000 (Viêt Nam)
Syringe volume/month (EPI) :	2 to 3 m ³ (Philippines)	1 to 2 m ³ (Viêt Nam)
Number of health units :	575 (Philippines)	312 (Viêt Nam)
Number of hospitals covered :	22 (Philippines)	22 (Viêt Nam)
GNP per capita (1995) :	1,050 (Philippines)	240 (Viêt Nam)

Schedule of activities†:

October 96 to July 97 :	Trial preparation & Staff orientation (10 months)
August 97 to January 98 :	Trial monitoring (6 months)
October 96 to January 98 :	Three WHO consultancies (overall lasting 3 months)

Estimated overall trial cost†:

Incinerator (4) :	10,000 USD	(1 incinerator per province)
Safety box (10,000) - Norway donation :	15,000 USD	(covering 50% of health units)
Equipment set (4) :	4,000 USD	(1 set per incinerator)
Fencing structure (4) :	4,000 USD	(1 structure per incinerator)
Training (4) :	2,000 USD	(1 training per province)
WHO Consultancy (3) :	35,000 USD	
Cost of the trial :	Total = 70,000 USD	

2. Main conclusions of the trial

2.1 Major advocacy efforts are necessary to get national and provincial governments to consider safe disposal of used syringes and needles as a priority.

It took a long time to prepare and to implement the trial. It required many visits and a lot of follow-up by WHO. This reflects low involvement/commitment by the national and provincial health authorities. It is important not to underestimate such a curb for further trials or implementation programmes. Conversely, district level staff were usually enthusiastic and supportive.

2.2 †With enough support and time, the implementation of a safe disposal (using safety boxes) and collection system can be successful.

The trial was successful in proving that a collection system using safety boxes, transported back to the district when full (at the time staff collect vaccines and syringes) can work well. However, changes in practices were only possible with the interest and commitment of the local staff.

2.3 The auto-combustion incinerator type tested, used to burn only syringes, did not function satisfactorily.

The auto-combustion incinerator tested (Sicim), selected for its properties, failed to burn large quantities of plastic syringes and needles efficiently. The major problem was poor combustion, smothering the fire and generating thick smoke. Additionally there was leakage of molten plastic from the incinerator, which constituted a safety risk. As the incinerator was selected for its low cost and simplicity (no fuel injection, no air ventilation), it seems now doubtful that auto-combustion incinerators can solve the problem of burning only syringes. However tests with the Sicim are continuing in district hospitals, now focusing on mixing syringes with other medical wastes.

2.4 The best result for safe destruction was collection of syringes and needles in carton safety boxes and burning at district level.

Amongst the different methods tested and monitored, the most effective result was obtained from collection using carton safety boxes and incineration in the open air (without incinerator) at the district level, in a controlled area. However, this solution should be considered only as a first step to promote safe disposal and destruction until more efficient and less polluting methods are available.

2.5 Logistics management, i.e. stock monitoring & distribution, is still very poor below the province level .

An important problem faced in implementing the trial was logistics (stock monitoring, distribution of safety boxes), especially at the district and health centre levels. Even in the trial (highly supervised), overstocking and shortages occurred, mainly due to mismanagement and lack of transport.

2.6 Concern about air pollution is a real curb to implementing any incineration project .

A major concern with incineration was the air pollution, both for incinerators and for open air burning. Several health centres were located in populated area, making any kind of simple incineration (where smoke can be seen) difficult, even if it happened only once a month. It was noticed that public concern over air pollution was greater than the concern regarding the risk of contamination by used syringes and needles.

2.7 District hospitals were strongly supportive of and committed to the trial.

It was impossible when the trial was prepared not to consider used syringes and needles from curative services, particularly for district hospitals. While larger hospitals had some methods available to dispose of used syringes, district hospitals were facing the same problem as health centres. Their strong involvement showed that they could be useful in facilitating the implementation of a safe disposal programme, i.e. more safety boxes will be required and will lower the cost per unit, district hospitals can help with advocacy to higher levels, and district hospitals may be an appropriate site for incinerators.

2.8 The overall trial outcome is positive (collection system works, staff become more aware).

Even though the incinerators were unable to meet the requirements, the overall outcome of the trial is positive. The collection system was proved to work and the health staff through their commitment showed that improvement is possible for safe disposal. However the sustainability will be the next challenge, above all ensuring a continuous supply of safety boxes. The trial will continue until June 1998, to confirm the preliminary results, and to look at the use of the incinerators as general waste disposal units in hospitals.

3. Safe disposal - what should be done now

Based on the results and conclusions of the trial, the following general recommendations are made†:

3.1 More time should be spent in spreading messages for safe disposal - i.e. advocacy

Previous experiences in trying to implement safe disposal and destruction processes, plus the experience from this trial in the Philippines and Viêt Nam trial show how important it is to spend time to promote the use of safety boxes and the concept of safe disposal. This promotion must be at the field level as well as through global recommendations or guidelines. International organizations have a key role to play.

3.2 Safety boxes clearly work† for disposables; advocacy is needed to include the cost of the safety boxes in national health budgets

Future† safe disposal† programmes for disposable syringes and needles will depend on the availability of funds to pay for safety boxes. Advocacy should go toward national and provincial health authorities (provincial because of devolution), to include costs in annual budgets. Countries which cannot afford that cost should be supported by international donors.

3.3 Local manufacturing should be supported to ensure cheaper safety boxes

The trial indicated that the cost of the safety boxes should be reduced if we want to be able to spread their use. A rough estimation for the Philippines and Viet Nam gave a maximum acceptable price of 0.5 USD per unit (5 to 7 litre carton safety box). Local manufacturing may be one way to meet that requirement. International organizations and donors should support local manufacturing and promote possible joint ventures. Many countries already have carton manufacturing companies which could possibly produce the safety boxes.

3.4 The search for an adequate incinerator - to burn only syringes - should be carried on

The failure with the Sicim incinerator should not stop the search for an adequate incinerator (autocombustion or otherwise) intended to burn only syringes.

3.5† Other systems for disposal and destruction should be investigated and evaluated

As incineration activities will face opposition in populated areas, other systems for disposal should be investigated and evaluated. Solutions could differ from one country to another, but the range of solutions should be clearly identified and promoted.

3.6 Other trials of safe disposal systems in other countries should look carefully at the use of safety boxes which are incinerated or disposed of at district level

As other trials on safe disposal and incineration are currently being or will be carried out (Ghana, Cambodia, South Africa, Ethiopia, possibly Central Asia, etc.), it seems important to emphasize two points†: firstly, the collection of used disposables with safety boxes, and secondly, disposal at the district level. The process for disposing of full safety boxes at the district level should be subject to research and test.

3.7 District hospitals should be included when implementing safe disposal programmes

For the reasons noted previously, district hospitals should be part of any safe disposal programme or trial. Even if it is not the concern of GPV/EPI, district hospitals could be supportive (by reducing the cost of the boxes, by advocating use). Cooperation should be initiated with WHO and UNICEF Environment Health Units. Data regarding the kind and volume of wastes should also be collected.

3.8† Adequate international staff are needed to promote of safe disposal programmes

No real progress will be made without a clearly identified international team, (WHO, UNICEF, or both) working only on the safety of injection and safe disposal and destruction of used injection equipment, with access to sufficient funds for research and to promote safe injections. Clear objectives have been established by WHO and UNICEF. Adequate critical mass is necessary to implement them.