

An African approach for Risk Reduction of Obsolete Pesticides

Situation

The Africa Stockpiles Programme (ASP), launched by FAO, the Food and Agriculture Organization of the United Nations, is designed to rid Africa of stockpiles of obsolete pesticides and to ensure that new stockpiles do not accumulate. A key objective of this programme is to ensure that stockpiles are disposed of in an environmentally sound manner. Most of the pesticides have been shipped to Africa for locust control from the fifties of last century, but did not arrive on the proper place or proper moment thereby becoming obsolete.

High concentrations of pesticides (e.g. dieldrin, parathion, malathion, chlorpyrifos) can be found in soils on the stockpiles and are a risk for human health, health of cattle, and quality of ground- and surface water. Removal of the high concentrations using northern technologies (e.g. incineration, bioreactor) or removal and transport of high amounts of contaminated soils was not found to be feasible for most of the sites involved. It is necessary to know the behavior of pesticides under different African conditions and explore

local remediation technology for each site following a risk-based approach, not only based on removal of high concentrations of pesticides.

Sites are distributed over the whole African continent, and can also be found in delta areas. Two of the investigated sites were located in the inner delta of the Niger river in Mali.

Aim

In risk assessments, the risks of pesticides are evaluated on the basis of concentrations present and maximum allowable values in soil and water. If finance or technology to remove the pesticides are lacking, this kind of assessment will not lead to solve the local problems. From a risk-based point of view, contaminations are only a risk if they are or may become available. This widens the range of options and therefore can facilitate more tailor-made solutions for individual sites.

Approach

To solve the problem of sites polluted by pesticides, the following steps are necessary:

Pesticides may be a risk for drinking water sources



1. Investigation of the site (e.g. historical use, hydrology, climate, transport)
2. Defining of the site specific risks
3. Gathering of missing information, including local conditions and sampling
4. Possibilities for site specific and sustainable remediation by risk reduction
5. Implementation of the risk reduction measures.

Field investigations, evaluation and set-up of the implementation were carried out in close cooperation with: FAO, Rome, Italy; African Stockpiles Programme-Mali, Bamako, Mali; Centre Nationale de Lutte contre le Criquet Pèlerin, Bamako, Mali; Laboratoire Central Vétérinaire, Bamako, Mali; Centre National de Lutte Antiacridienne, Nouakchott, Mauritania.

Results

Three sites in Mali and three sites in Mauretania have been investigated in 2007 according steps 1-3. Most important risks identified were: a) inhalation of volatilized pesticides, b) transport to groundwater, c) physical contact by human and cattle, d) run-off by rain (Mali) and e) wind erosion (Mauretania). Based on the results

obtained and results of analysis of the samples taken, risk reduction proposals have been made and discussed locally (step 4). All proposals are based on the use of local conditions to stimulate biodegradation and/or to prevent rain water to transport the pesticides both vertical and horizontal. In populated areas, a plan for future use was part of the solution to prevent houses from being built on the isolated site. All plans have in common that they reduce the risks for the local population. Furthermore, they are simple and cheap and can be implemented on a sustainable way, even under the difficult African conditions.

Follow up

Implementations (step 5) in both countries have been started in summer 2008. In 2009 the implementation will continue and a workshop will be organized to present the results and to investigate the possibilities to use the concepts developed also in other African countries.

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