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## Environmental Protection Agency

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Our Ref: GC 43/224/03/02/27

19th July 2007

The Acting Executive Secretary  
Secretariat of the Stockholm Convention  
POPS review Committee  
United Nations Environment Programme  
11-13 chemin des Anemones  
CH-1219, Chatelaine, Geneva, Switzerland  
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Attention: Ms. Fatoumata Keita Ouane

Dear Madam,

Re: Invitation to submit Comments to the POPs review Committee on Draft Risk Management  
Evaluation of Chemicals Proposed for Listing in Annexes of the Stockholm Convention

Your letter of 1st June 2007 on the above subject matter refers. Please find attached Ghana's comments on the Draft Risk Management Evaluation on Lindane for your attention

Please do not hesitate to contact us should you require any additional information

Kind regards

  
JONATHAN A. ALLOTEY  
EXECUTIVE DIRECTOR

## PRELIMINARY ASSESSMENT OF THE LIFE CYCLE MANAGEMENT OF LINDANE (GAMMA-HCH) IN GHANA

### ***Introduction***

A situation analysis was carried out in 2002 to ascertain the status of lindane (gamma-HCH) formulated as Gammalin 20EC in Ghana (Clarke et al, 2002). This was necessary for the development of a risk management strategy for lindane in Ghana.

### ***Past and Present Use of Lindane in Ghana***

Lindane was used predominantly for cocoa in Ghana and was particularly effective against pests such as cocoa capsids or mirids. Lindane was first experimented in 1950 and found to be more effective than DDT. Capsids resistance to gamma HCH was indicated as early as 1962. Until recently when its use on cocoa was discontinued, lindane had been alternated with Uden (Propoxur) (a carbamate) in the cocoa industry. Lindane serves to control insects that bore into stem of crops including maize, thereby destroying them. Currently lindane (Gammalin 20EC) and Uden have been replaced with safer alternatives including Confidor 200SL (Imidachloprid) and Akate Master (Bifenthrin). In the food crop sector, pesticides including Dursban (Chlorpyrifos) and Fipronil have replaced the organochlorines (Ghana NIP, 2007).

By 1978 the annual use of lindane in Ghana was of the order of 900,000Litres per year (Owusu-Manu et al., 1993/94). In accordance with the directive of the European Union Advisory Committee on Pesticides, all cocoa producing countries have discontinued the use of lindane on cocoa since 2002. The National Committee on Cocoa Diseases and Pest Control (CODAPEC) therefore decided to use all remaining quantities in stock in 2001 before the 2002 deadline. The exercise chalked some successes though some quantities still remained in stock. Though lindane was restricted for use on cocoa, due to mixed cropping, other crops ended up being sprayed with lindane. These crops include maize, cocoyam and cassava.

### ***Sources, Importation, Formulation and Distribution of Lindane in Ghana***

Lindane has been formulated and distributed in Ghana by Chemico Ghana Limited (formerly known as ICI Ghana Limited) under the product name Gammalin 20EC since 1959 with the Ghana Cocoa Board as its sole client/purchaser for the cocoa industry. Importation of lindane into Ghana has been solely from the United Kingdom. It is however generally believed that some quantities of lindane have found their way into the hands of unauthorized dealers in the country from unauthorized sources, mainly through the neighboring countries.

### ***Relevant Legislation and Current Status of Lindane in Ghana***

The Environmental Protection Agency is responsible for controlling the importation, distribution, use and application of lindane in Ghana. This is in accordance with the Pesticides Control and Management Act, 1996 (Act 528). Under Act 528, lindane is classified as a restricted chemical. Chemico Limited and the Ghana Cocoa Board were the sole official recognized dealers and distributors of lindane in Ghana. Lindane is subject to the Rotterdam Convention on Prior Informed Consent (PIC) Procedure of Certain Pesticides and Chemicals in International Trade, of which Ghana is a Party.

### **Human Health and Environmental Exposure/Effects of Lindane in Ghana**

#### ***Human Health***

There are no scientific reports of monitoring of health and environmental effects of lindane in Ghana (Clarke et al., 2002). There is however anecdotal evidence of persons dying from acute poisoning following the accidental ingestion of lindane contaminated vegetables consumed shortly after application

and also from (intentional) suicidal attempts. Lapses in safety practices observed go to explain at least in part the reasons for a high risk of potential exposure.

#### ***Environmental***

Not much research has been undertaken in this regard. Some studies have however shown the residue levels of lindane in maize grains to be 0.02 µg/g, which is below the recommended maximum residue limits. Analysis conducted on selected crops treated with lindane revealed levels of Lindane between 0.002 µg/g to 0.027µg/g. (Klake et al., 1994). Gammalin 20EC was used for baseline comparison with Miral and Confidor (both systemic insecticides for the control of cocoa mirids) in a field trial (Owusu-Manu et al., 1993/94). Gammalin 20EC plots had the least re-infection rate followed by Confidor. Fresh capsid damaged trees showed a similar trend where Gammalin 20EC and Confidor had the least percentage of damaged trees. Improvement in damaged cocoa trees was more pronounced in the Confidor treated plots than in Gammalin 20EC plots.

#### ***Estimates of Stockpiles of Lindane in Ghana***

A survey conducted in 2001 by CODAPEC estimated about 370,000Litres of lindane (Gammalin 20EC) in Ghana, of which 76,546Litres were found to be in specified locations. The dates of manufacture ranged from 1997 to 1999. A number of these stocks were found leaking and evaporating into the environment due to damaged caps and the general poor storage facilities.

#### ***Methods of Disposal for stockpiles/Obsolete Stocks of Lindane in Ghana***

No recommended disposal practices are currently in place. In the past users indiscriminately disposed of unused stocks or obsolete stocks without due regard to human health and the environment. Storekeepers and dealers likewise had no personal protective equipment (PPE) such as nose masks, goggles and gloves and were thus exposed to high risks of contamination and poisoning.

#### **REFERENCES**

1. Clarke, E., Adu-Kumi, S., Suglo, V., Situational Analysis of Lindane in Ghana, May 2002.
2. Ghana National Implementation Plan, 2007
3. Klake et al., MPhil Thesis 1994
4. Owusu-Manu et al., Ghana Cocoa Board Annual Report, 1993/94