

## Format for submitting pursuant to Article 8 of the Stockholm Convention the information specified in Annex E of the Convention

Introductory information	
<b>Name of the submitting Party/observer</b>	Ministry of Nature Protection of the Republic of Armenia
<b>Contact details (name, telephone, e-mail) of the submitting Party/observer</b>	Ms. Anahit Aleksandryan, Head, Hazardous Substances and Wastes Management Department Telephone: (37410) 53-88-38 E-mail: <a href="mailto:analeks@freenet.am">analeks@freenet.am</a>
<b>Chemical name (as used by the POPS Review Committee (POPRC))</b>	Lindane, the gamma isomer of hexachlorocyclohexane (HCH) CAS Number 58-89-9
<b>Date of submission</b>	<b>December 20, 2005</b>

(a) Sources, including as appropriate (provide summary information and relevant references)	
<b>(i) Production data:</b>	No production
<b>Quantity</b>	
<b>Location</b>	
<b>Other</b>	
<b>(ii) Uses</b>	Lindane is not included in the "List of chemical and biological plant protection means allowed for application in the Republic of Armenia" approved by the Ministry of Agriculture of the Republic of Armenia (Order No. 198-N of November 18, 2003; Agency act);  Use of Lindane is banned by "List of chemicals, biological substances, heavy metals or their compounds and other substances, which have negative impact on the ecosystem of Lake Sevan", approved by Governmental Decision No57 dated January 24, 2002.
<b>(iii) Releases:</b>	
<b>Discharges</b>	n/a
<b>Losses</b>	n/a
<b>Emissions</b>	n/a
<b>Other</b>	

(b) Hazard assessment for endpoints of concern, including consideration of toxicological interactions involving multiple chemicals (provide summary information and relevant references)
<p>LD<sub>50</sub> of Lindane for different experimental animals is ranged from 25 to 200 mg/kg. The chemical is characterized by skin-resorbitive and irritating effects. Maximal Acceptable Concentration (MAC) of Lindane in air of working zone is 0.05 mg/m<sup>3</sup>.</p> <p>Acceptable residue concentrations of Lindane in plant origin products should not exceed 0.5 mg/kg but in animal origin products its residues are prohibited<sup>1</sup>.</p> <p>Lindane is very toxic for bees and other useful insects<sup>1</sup>.</p> <p>CK<sub>50</sub> for fishes is 0.03-0.06 mg/l<sup>1</sup></p>

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<b>(c) Environmental fate (provide summary information and relevant references)</b>	
<b>Chemical/physical properties</b>	Lindane forms colorless crystals; its melting point is 112,8°C. Lindane solubility in water at room temperature is 10 mg/l; in benzene - 28,9; ether - 20,8; acetone - 43,5; alcohol - 6,7; kerosene – 3 mg in 100 ml of solvent. It is volatile, substance's vapor pressure is $9,4 \times 10^{-6}$ torr at 20°C. It is unattacked by strong acids but dehydrochlorinated by alkali <sup>1 2 3</sup> .
<b>Persistence</b>	It is stable to light and water, explosive substance <sup>2</sup> .
<b>How are chemical/physical properties and persistence linked to environmental transport, transfer within and between environmental compartments, degradation and transformation to other chemicals?</b>	In former USSR Lindane application was strongly limited, because of its persistence. Planting of storage root for food purposes in soil treated by Lindane was allowed not earlier than 4 years after it previous application. During 30 days cattle pasture was prohibited on treated plots <sup>1</sup> .
<b>Bio-concentration or bio-accumulation factor, based on measured values (unless monitoring data are judged to meet this need)</b>	Due to Lindane bio-accumulation ability the following Maximal Acceptable Levels were approved by former Ministry of Health of USSR in different products of animal origin, such as in: meat – 0.1 mg/kg, eggs – 0.1 mg/kg, milk – 0.05 mg/kg, butter – 0.2 mg/kg <sup>1</sup> .

<b>(d) Monitoring data (provide summary information and relevant references)</b>
In soils of plough-lands of Armenia, average residues of Lindane were ranged from 0.16 to 1.42 mcg/ kg; in separate homestead lands – from 0.24 to 13.42 mcg/ kg. Average residues of Lindane in surface water were revealed on 0.05-0.2 mcg/l level; in bottom sediments 0.17-1.63 mcg/ kg. Average content of Lindane in foodstuffs of animal origin were the followings: in eggs – 0.35-0.73 mcg/kg; meat – 0.23-1.01 mcg/kg; milk – 0.06-2.25 mcg/l; cheese – 0.03-5.17 mcg/kg <sup>4</sup> .

<b>(e) Exposure in local areas (provide summary information and relevant references)</b>	
<b>- general</b>	
<b>- as a result of long-range environmental transport</b>	In former USSR Lindane MAC in water was 0.02 mg/l <sup>5</sup> .
<b>- information regarding bio-availability</b>	Average Lindane concentrations in breast milk of female inhabitants of rural region of the Republic of Armenia (marz Aragatsotn) during 1993-2001 years were determined between 0.0002 – 0.0097 mg/l <sup>4</sup> .

<sup>1</sup> Handbook on pesticides /N. Melnik, K. Novozilov, S. Belan, T. Pylova. Moscow, Chemistry, 1985, pp. 147-148.

<sup>2</sup> Handbook on pesticides (Hygiene of use and toxicology). Edited by Professor A. Pavlov, Kiev, Urozhay, 1986, pp 30-33.

<sup>3</sup> Pesticide Manual. Basic Information on the Chemicals used as Active Components of Pesticides, Fifth edition. Edited by Hubert Martin. British Crop Protection Council. 1977, p.287.

<sup>4</sup> National Implementation Plan for the Stockholm Convention on Persistent Organic Pollutants in the Republic of Armenia, Yerevan, 2005.

<sup>5</sup> Handbook on Maximal Acceptable Concentrations of chemicals in environment /G.Besspamyatnov, Yu.Krotov/. Leningrad, Chemistry, 1985, p 154.

**(f) National and international risk evaluations, assessments or profiles and labelling information and hazard classifications, as available (provide summary information and relevant references)**

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**(g) Status of the chemical under international conventions**

The chemical is submitted to the next COP of the Stockholm Convention for consideration.