



**United Nations
Environment Programme
Food and Agriculture Organization
of the United Nations**

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**Rotterdam Convention on the Prior Informed
Consent Procedure for Certain Hazardous
Chemicals and Pesticides in International Trade
Chemical Review Committee**

Second meeting

Geneva, 13–17 February 2006

Item 5 (b) of the provisional agenda*

**Listing of chemicals in Annex III of the Rotterdam Convention:
Review of notifications of final regulatory actions to ban
or severely restrict a chemical: mirex**

Mirex

Note by the Secretariat

1. Under article 5 of the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade, when the secretariat has received at least one notification from each of two prior informed consent (PIC) regions that contain the information required in Annex I to the Convention, it shall forward the notifications and accompanying documentation to the members of the Chemical Review Committee. The Committee shall review the information provided in such notifications and, in accordance with the criteria set out in Annex II, recommend to the Conference of the Parties whether the chemical in question should be included in Annex III and a decision guidance document drafted.
2. The secretariat has received three notifications from three PIC regions relating to Mirex which meet the information requirements of Annex I (North America – Canada; Asia – Japan; and Europe – Bulgaria). Summaries of those notifications were included in PIC Circular XII of December 2000, PIC Circular XXI of June 2005 and PIC Circular XXII of December 2005. The notifications as they were received from the notifying countries are annexed to the present note.
3. The supporting documentation provided by Canada, Japan and Bulgaria, where available, may be found in documents UNEP/FAO/RC/CRC.1/16/Add.1, Add.2 and Add.3.

* UNEP/FAO/RC/CRC.2/1.

Annex



**FORM
FOR NOTIFICATION OF FINAL REGULATORY ACTION
TO BAN OR SEVERELY RESTRICT A CHEMICAL**

IMPORTANT: See instructions before filling in the form

COUNTRY: Canada

PART I: PROPERTIES, IDENTIFICATION AND USES

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| 1. IDENTITY OF CHEMICAL | | |
| 1.1 | Common name | Mirex |
| 1.2 | Chemical name according to an internationally recognized nomenclature (e.g. IUPAC), where such nomenclature exists | Dodecachloropentacyclo [5.3.0.0 ^{2,6} .0 ^{3,9} .0 ^{4,8}] decane |
| 1.3 | Trade names and names of preparations | GC-1283; ENT 25719; Dechlorane; Dechlorane 4070; Dechlorane Plus; C ₁₀ Cl ₁₂ ; Ferriamicide; HRS 1276; Bichlorendo |
| 1.4 | Code numbers | |
| 1.4.1 | CAS number | 2385-85-5 |
| 1.4.2 | Harmonized System customs code | |
| 1.4.3 | Other numbers (specify the numbering system) | RTECS PC8225000 |

PLEASE RETURN THE COMPLETED FORM TO:

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| Interim Secretariat for the Rotterdam Convention Plant Protection Service Plant Production and Protection Division, FAO Viale delle Terme di Caracalla 00100 Rome, Italy Tel: (+39 06) 5705 3441 Fax: (+39 06) 5705 6347 E-mail: pic@fao.org | OR | Interim Secretariat for the Rotterdam Convention UNEP Chemicals 11-13, Chemin des Anémones CH - 1219 Châtelaine, Geneva, Switzerland Tel: (+41 22) 917 8183 Fax: (+41 22) 797 3460 E-mail: pic@unep.ch |
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| 1.5 Indication regarding previous notification on this chemical, if any | |
| 1.5.1 | <input checked="" type="checkbox"/> This is a first time notification of final regulatory action on this chemical. |
| 1.5.2 | <input type="checkbox"/> This is a modification of a previous notification of final regulatory action on this chemical. The sections modified are: _____ |
| | <input type="checkbox"/> This notification replaces all previously submitted notifications on this chemical. |
| Date of issue of the previous notification: | |

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| 1.6 Information on hazard classification where the chemical is subject to classification requirements | |
| International classification systems | Hazard class |
| IARC | Group 2B: possible human carcinogen |
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| Other classification systems | Hazard class |
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| 1.7 Use or uses of the chemical | |
| 1.7.1 | <input type="checkbox"/> Pesticide |
| | Describe the uses of the chemical as a pesticide in your country: _____ |
| 1.7.2 | <input checked="" type="checkbox"/> Industrial |
| | Describe the industrial uses of the chemical in your country: Technical mirex contains approximately 95% mirex and 2.5% chlordecone. It has been used worldwide against fire ants, termites and other insect pests. However, mirex was never registered for use as an agricultural pesticide in Canada. It has mainly been used as a fire retardant agent in plastics, rubber, paint paper and electrical goods. It has also been used as a pyrotechnic for generating white smoke. |

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| 1.8 | Properties |
| 1.8.1 | Description of physico-chemical properties of the chemical |
| | <p>Mirex occurs as white, odorless crystals. Melting point: 485 °C Vapour pressure: 3×10^{-7} mm Hg at 25 °C Practically insoluble in water. Soluble in dioxane, xylene, benzene, carbon tetrachloride, and methyl ethyl ketone.</p> |
| 1.8.2 | Description of toxicological properties of the chemical |
| | <p>Data on the human health effects are not available. The primary organs affected by mirex in experimental animals are the liver, kidney, eyes, and thyroid.</p> <p>Acute Effects:</p> <ul style="list-style-type: none"> • Diarrhea due to hemorrhagic intestines. • Increase in hematocrit. • Hepatic effects (adaptive and toxic effects). • Dermal/ocular effects (hair loss, production of cataracts in very young, mild epidermal proliferation; in mice). • Toxic effects to the thyroid. • Adrenal gland hypertrophies and releases increased levels of corticosterone. • Decreases in serum glucose levels. • Decreases in body weight or body weight gain greater than 10 percent. • Abnormal behaviour (lethargy, weakness, hyper-excitability, tremors, convulsions). <p>Chronic Effects (Noncancer):</p> <ul style="list-style-type: none"> • Renal effects. • Decreases in body weight or body weight gain greater than 10 percent. • Non-precancerous lesions of the liver <p>Reproductive/Developmental Effects:</p> <ul style="list-style-type: none"> • Reproductive and developmental effects in female and male rats. <p>Genotoxicity:</p> <ul style="list-style-type: none"> • No information available. <p>Carcinogenicity:</p> <ul style="list-style-type: none"> • An increased incidence of hepatocellular adenomas have been noted, but only in animals having hepatotoxicity. • IARC has classified mirex as possibly carcinogenic to humans, based on sufficient evidence in animals, but inadequate evidence of carcinogenicity in humans. <p>Data:</p> <p>LD₅₀ (rabbit, dermal): 800 mg/kg LD₅₀ (male & female rat, dermal): > 2,000 mg/kg LD₅₀ (rat, intraperitoneal): 365 mg/kg LD₅₀ (rat, intraperitoneal (corn oil)): 700 ppm LD₅₀ (mouse, intraperitoneal (corn oil)): 330 ppm LD₅₀ (female rat, oral): 365 mg/kg to 600 ± 102 mg/kg</p> |

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| 1.8.2 | <p>Description of toxicological properties of the chemical (cont'd)</p> <p>LD₅₀ (female rat, oral (corn oil)): 600 mg/kg LD₅₀ (male rat, oral (corn oil)): 740 mg/kg LD₅₀ (male rat, oral): 306 ± 71 mg/kg LD₅₀ (male & female rat, oral (peanut oil)): > 3,000 mg/kg LD₅₀ (mouse, oral): 15 - 30 ppm (90 days) LD₅₀ (female rat, oral): 6 mg/kg (90 days) LD₅₀ (rat, oral): 100 ppm LC₅₀ (female rat, oral): 275 ppm (30 days) LC₅₀ (male rat, oral): 607 ppm (30 days)</p> <p>References:</p> <p>Contaminant Profiles, Mirex, Health Canada (http://www.hc-sc.gc.ca/ehp/ehd/catalogue/bch_pubs/98ehd211/con_profiles.pdf)</p> <p>Mirex, Environmental Health Criteria Document, Health and Welfare Canada, Health Protection Branch, 77-EHD-12, September 1977, 168 p.</p> |
| 1.8.3 | <p>Description of ecotoxicological properties of the chemical</p> <p>Acute Effects:</p> <ul style="list-style-type: none"> • Data available suggest that mirex can be toxic to plants and unicellular organisms but probably at relatively high concentrations. • Avian species as a group appear to be relatively insensitive to the toxic effects of mirex. • Several marine species are extremely sensitive to mirex, particularly crayfish, crabs and shrimps. At concentrations of mirex as low as 0.1 µg/L toxic effects were noted in crayfish, shrimp and crab juveniles exposed for 3 weeks experimentally. <p>Data:</p> <p>LD₅₀ (mallard duck, oral): 2,400 mg/kg LD₅₀ (coturnix quail, oral): 10,000 ppm LD₅₀ (pheasant, oral): 1,400 - 1,600 ppm LD₅₀ (young male grackle, oral): 750 ppm (12 days) LD₅₀ (adult male cowbird, oral): 750 ppm (12 days) LD₅₀ (adult female red-winged blackbird, oral): 750 ppm (11 days) LD₅₀ (young female starling, oral): 750 ppm (9 days) LD₅₀ (quail, intraperitoneal): 300 mg/kg</p> <p>References:</p> <p>Mirex, Environmental Health Criteria Document, Health and Welfare Canada, Health Protection Branch, 77-EHD-12, September 1977, 168 p.</p> |

PART II: FINAL REGULATORY ACTION

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| 2. | FINAL REGULATORY ACTION |
| 2.1 | The chemical is: <input checked="" type="checkbox"/> banned OR <input type="checkbox"/> severely restricted |
| 2.2 | Information specific to the final regulatory action |
| 2.2.1 | Summary of the final regulatory action These Regulations prohibit the manufacture, use, processing, sale, offering for sale and import of <u>certain</u> toxic substances, such as mirex, that appear on the list of toxic substances in Schedule I to the <i>Canadian Environmental Protection Act (CEPA)</i> . These Regulations do not apply in respect of the manufacture, use, processing, sale, offering for sale or import of a prohibited substance for use in a laboratory for scientific research purposes or as a laboratory analytical standard. |
| 2.2.2 | Reference to the regulatory document <i>Prohibition of Certain Toxic Substances Regulations (SOR/96-237) and Regulations Amending The Prohibition of Certain Toxic Substances Regulations (SOR/98-435) under the Canadian Environmental Protection Act.</i> |
| 2.2.3 | Date of entry into force of the final regulatory action SOR/96-237: 30/4/1996 SOR/98-435: 26/8/1998 |

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| 2.3 | Was the final regulatory action based on a risk or hazard evaluation? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| | If yes, give information on such evaluation <u>Background</u> <u>Canada</u> Mirex is specified on the List of Toxic Substances in Schedule I to the <i>Canadian Environmental Protection Act (CEPA)</i> . The assessment of substances to determine if they are "toxic" under the CEPA is a shared responsibility of Environment Canada and Health Canada. Environment Canada assesses the environmental risks, and Health Canada assesses the human health risks. An assessment is conducted to determine if a substance is likely to harm the environment or the health of humans, taking into account the likelihood and magnitude of releases at levels occurring in the Canadian environment. Thus "toxic" in the context of CEPA is a function of both the inherent properties of a substance and the amounts, concentrations, or nature of entry of the substance in the Canadian environment. The assessment process thus provides a framework for making science-based decisions on the effective management of toxic substances that are of concern. The determination of whether or not a substance is "toxic" must be based on sound, scientifically reliable data. Under CEPA, a substance is toxic if it is entering or may enter the environment in a quantity or concentration or under conditions that (a) have or may have an immediate or long-term harmful effect on the environment or its biological diversity; (b) constitute or may constitute a danger to the environment on which life depends; or (c) constitute or may constitute a danger in Canada to human life or health. |

If yes, give information on such evaluation (cont'd)

For substances determined to be "toxic", management options are identified and implemented, in consultation with stakeholders to reduce or eliminate the risks the substances pose to human health or the environment. Management strategies, which integrate socio-economic considerations, may include voluntary controls, process changes, substitutions, economic measures; regulations, guidelines, codes of practice, or a combination of these measures. It should be noted that the designation of a substance as "toxic" does not necessarily mean that controls will be imposed. Such decisions are made in a risk management phase that includes a judicious balancing of the risks and benefits associated with continued use of the substance.

International

In response to the increasing international awareness concerning the environmental and human health risks associated with certain persistent organic pollutants (POPs) mirex was identified as one of the priority substances for consideration in the negotiation of a Protocol for POPs under the United Nations Economic Commission for Europe Convention on Long-range Transboundary Air Pollution.

Due to increasing concern about the risks to human health and the environment posed by persistent organic pollutants, the United Nation Environment Programme (UNEP) has initiated a process to evaluate the need to develop a global legally-binding instrument for managing these substances. At the invitation of the UNEP Governing Council the Intergovernmental Forum for Chemical Safety (IFCS) submitted a report to the Governing Council for consideration in 1997. The report concluded that there was sufficient scientific knowledge to warrant immediate international action to protect human health and the environment and to develop a global legally binding instrument to that effect. Mirex was one of the initial 12 substances to be considered under this initiative.

Summary of Risk Assessment

The main sources of mirex in Canada are located in New York State (U.S.) in the Niagara River and the Oswego River where chemical manufacturing and fire retardant production plants were located. This transboundary movement of mirex into Canadian waters has resulted in contamination of fish and fish-feeding birds with the results that mirex contaminates several ecosystems in Canada. Mirex is biologically active, accumulates in food chains, is extremely persistent and dispersed in the environment.

Canadian human exposure to mirex is generally minimal except in the group partially or wholly dependent on a diet of fish or fish-eating birds from Lake Ontario and the St. Lawrence River. A second, very small, group at risk are those hunters that occasionally eat meals of game birds.

Sufficient data were not available to enable a meaningful calculation of either an acceptable or tolerable level of mirex in the Canadian environment with respect to wildlife and aquatic life. It should be noted that the U.S. EPA has set the maximum concentration of mirex permissible in water for fresh water and marine aquatic life at 0.001 µg/L. This value was obtained through the use of an application factor of 0.01 times the lowest concentration at which effects have been noted in crayfish, the most sensitive species tested.

Reference to the relevant documentation

Mirex, Environmental Health Criteria Document, Health and Welfare Canada, Health Protection Branch, 77-EHD-12, September 1977, 168 p.

Mirex in Canada, A report of the task force on mirex, April 1 1977 to the Environmental Contaminants Committee of Fisheries & Environment Canada and Health & Welfare Canada, Technical Report 77-1, 153 p.

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| 2.4 | Reasons for the final regulatory action | |
| 2.4.1 | Is the reason for the final regulatory action relevant to the human health? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| | If yes, give summary of the known hazards and risks presented by the chemical to human health, including the health of consumers and workers | |
| | In humans, mirex is stored mainly in fat tissue, where it is not broken down. Mirex has been demonstrated to cause cancer in experimental animals and possibly carcinogenic to humans. | |
| | Reference to the relevant documentation | |
| | Mirex, Environmental Health Criteria Document, Health and Welfare Canada, Health Protection Branch, 77-EHD-12, September 1977, 168 p. | |
| | Expected effect of the final regulatory action | |

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| 2.4.2 | Is the reason for the final regulatory action relevant to the environment? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| | If yes, give summary of the known hazards and risks to the environment | |
| | <p>Quantitative information describing the persistence of mirex is limited. However, the available information consistently indicates that the substance is persistent in the environment. For example, 12 years after its application to a clay soil, 50% of the mirex originally applied was recovered as mirex and mirex-related compounds with mirex representing between 65-70% of the total residues. Mirex decomposition in the environment takes place chiefly by photolysis. Anaerobic decomposition by microorganisms can occur, but it is not extensive. Mirex is also recognized to be subject to long-range transport and has been demonstrated to persist in sediment. On the basis of the available information, it was concluded that mirex is persistent in the environment.</p> <p>Mirex can accumulate in living tissues. In experimental work with aquatic organisms, all species at all trophic levels have been found to accumulate this substance. Bioaccumulation factors of 15,000 and 51,000 have been observed in lake trout captured in Lake Ontario and fathead minnows. A comparison of concentrations of mirex in lake trout, a predator species, with those in smelt, a prey species, gives a ratio of 1.26, indicating that biomagnification is occurring. A biomagnification factor of 10^8 for mirex between its concentration in water of Lake Ontario and the St. Lawrence River and in beluga whale oil has been reported.</p> <p>In experimental studies with birds mirex has been shown to accumulate particularly in fatty tissues. A study showed that mirex fed to roosters accumulated to about 100 times the concentration in the feed in thirty-two weeks. When the roosters were given clean food the mirex residues slowly decreased. Similar studies were conducted on mammals with similar findings. On the basis of the available information, it was concluded that mirex is a bioaccumulative substance.</p> | |
| | Reference to the relevant documentation | |
| | Mirex, Environmental Health Criteria Document, Health and Welfare Canada, Health Protection Branch, 77-EHD-12, September 1977, 168 p. | |
| | Mirex in Canada, A report of the task force on mirex, April 1 1977 to the Environmental Contaminants Committee of Fisheries & Environment Canada and Health & Welfare Canada, Technical Report 77-1, 153 p. | |
| | Expected effect of the final regulatory action | |

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| 2.5 Category or categories where the final regulatory action has been taken | |
| 2.5.1 | Final regulatory action has been taken for the chemical category <input checked="" type="checkbox"/> Industrial |
| | Use or uses prohibited by the final regulatory action All uses other than those specified below are prohibited. |
| | Use or uses that remain allowed For use in a laboratory for scientific research purposes or as a laboratory analytical standard. |
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| 2.5.2 | Final regulatory action has been taken for the chemical category <input type="checkbox"/> Pesticide |
| | Formulation(s) and use or uses prohibited by the final regulatory action |
| | Formulation(s) and use or uses that remain allowed |

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| 2.5.3 Estimated quantity of the chemical produced, imported, exported and used, where available. | | |
| | Quantity per year (MT) | Year |
| Produced | never manufactured in Canada | |
| Imported | 146 metric tonnes | 1963-1976 |
| Exported | | |
| Used | | |

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| 2.6 | Indication, to the extent possible, of the likely relevance of the final regulatory action to other states and regions |
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| 2.7 Other relevant information that may cover: | |
| 2.7.1 | Assessment of socio-economic effects of the final regulatory action <p>The Task Force on mirex recommended formal control for the importation and use of mirex. The Task Force considered there were no uses for which mirex was indispensable in Canada. There were substitute materials for the main uses of mirex. In fact, at the time of the investigation, mirex was probably no longer marketed in Canada nor stockpiled. Therefore its use could be prohibited, as a preventative measure, without major economic or social disruption and without increasing the risk of fire hazard to the public from products that require fire retardant additives.</p> |
| 2.7.2 | Information on alternatives and their relative risks <p>Fire retardancy in compositions formerly including mirex has been achieved through the use of substitutes or through the use of alternative plastics technology. The Task Force on mirex recognized however that there was a need to assess the hazard of substitute materials particularly the other organochlorine Dechloranes and their transformation products. No information on such assessment was found since the publication of the Task Force's report (April 1977).</p> |
| 2.7.3 | Relevant additional information <p>The federal <i>Toxic Substances Management Policy</i> was released in June 1995. The policy guides federal regulatory and non-regulatory programs by defining the ultimate management objective for a substance. The key management objectives in the policy are:</p> <ul style="list-style-type: none"> • virtual elimination from the environment of toxic substances that result predominantly from human activity and that are persistent and bioaccumulative (referred to in the policy as Track 1 substances). Virtual elimination is defined as the reduction of releases of a substance to below a concentration that can be accurately measured ("level of quantification"); and • management of other toxic substances and substances of concern, throughout their entire life cycles, to prevent or minimize their release into the environment (referred to in the policy as Track 2 substances). <p>Mirex was found to be a Track 1 substance and as such is to be virtually eliminated from the environment. However, no new action was taken as it was considered to be already adequately managed with the Regulations.</p> |

PART III : GOVERNMENT AUTHORITIES

| Ministry/Department and authority responsible for issuing/enforcing the final regulatory action | |
|--|--|
| Institution | Environment Canada Environmental Protection Service Commercial Chemicals Evaluation Branch Chemicals Control Division |
| Address | Place Vincent Massey Ottawa, Ontario K1A 0H3 |
| Telephone | (819) 994-3648 |
| Telefax | (819) 994-0007 |
| E-mail address | Bernard.Made@ec.gc.ca |
| Designated National Authority | |
| Institution | Environment Canada Environmental Protection Service Commercial Chemicals Evaluation Branch |
| Address | Place Vincent Massey Ottawa, Ontario K1A 0H3 |
| Name of person in charge | John Buccini |
| Position of person in charge | Director |
| Telephone | (819) 997-1499 |
| Telefax | (819) 953-4396 |
| E-mail address | John.Buccini@ec.gc.ca |

Date, signature of DNA and official seal: _____

John Buccini 17/05/2000



**FORM
FOR NOTIFICATION OF FINAL REGULATORY ACTION
TO BAN OR SEVERELY RESTRICT A CHEMICAL**

IMPORTANT: See instructions before filling in the form

COUNTRY: JAPAN

PART I: PROPERTIES, IDENTIFICATION AND USES

| | | |
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| 1. IDENTITY OF CHEMICAL | | |
| 1.1 | Common name | Mirex |
| 1.2 | Chemical name according to an internationally recognized nomenclature (e.g. IUPAC), where such nomenclature exists | 1,1a,2,2,3,3a,4,5,5a,5b,6-dodecachloroacta-hydro-1,3,4-metheno-1H-cyclobuta[cd]pentalene |
| 1.3 | Trade names and names of preparations | Dechlorane, Ferriamicide, GC 1283 |
| 1.4 | Code numbers | |
| 1.4.1 | CAS number | 2385-85-5 |
| 1.4.2 | Harmonized System customs code | 2903.59 |
| 1.4.3 | Other numbers (specify the numbering system) | |

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| 1.5 Indication regarding previous notification on this chemical, if any | |
| 1.5.1 | <input checked="" type="checkbox"/> This is a first time notification of final regulatory action on this chemical. |
| 1.5.2 | <input type="checkbox"/> This is a modification of a previous notification of final regulatory action on this chemical. The sections modified are: _____ |
| | <input type="checkbox"/> This notification replaces all previously submitted notifications on this chemical. |
| | Date of issue of the previous notification: _____ |

PLEASE RETURN THE COMPLETED FORM TO:

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| Interim Secretariat for the Rotterdam Convention Plant Protection Service Plant Production and Protection Division, FAO Viale delle Terme di Caracalla 00100 Rome, Italy Tel: (+39 06) 5705 3441 Fax: (+39 06) 5705 6347 E-mail: pic@fao.org | OR | Interim Secretariat for the Rotterdam Convention UNEP Chemicals 11-13, Chemin des Anémones CH - 1219 Châtelaine, Geneva, Switzerland Tel: (+41 22) 917 8183 Fax: (+41 22) 797 3460 E-mail: pic@unep.ch |
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| 1.6 Information on hazard classification where the chemical is subject to classification requirements | |
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| International classification systems | Hazard class |
| IARC | Group 2B |
| WHO/recommended classification of pesticides by hazard | O(obsolete) |
| UN Recommendations on the Transport of Dangerous Goods | UN Number 2762, 2995, 2996; Class 6.1, 3 |
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| Other classification systems | Hazard class |
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| 1.7 Use or uses of the chemical | |
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| 1.7.1 | <input checked="" type="checkbox"/> Pesticide |
| | Describe the uses of the chemical as a pesticide in your country: Insecticide (no domestic use reported). |
| 1.7.2 | <input checked="" type="checkbox"/> Industrial |
| | Describe the industrial uses of the chemical in your country: Flame retardants (no domestic manufacture, import or use reported). |

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| 1.8 | Properties |
| 1.8.1 | <p data-bbox="221 203 1439 246">Description of physico-chemical properties of the chemical</p> <p data-bbox="221 246 1439 291">Melting point: 485 C</p> <p data-bbox="221 291 1439 336">vapour pressure: 3×10^{-7} mm Hg at 25 C.</p> <p data-bbox="221 336 1439 403">Source; An Assessment Report on DDT, Aldrin, Dieldrin, Endrin, Chlordane, Heptachlor, Hexachlorobenzene, Mirex, Toxaphene, Polychlorinated Biphenyls, Dioxins and Furans (L. Ritter et al., December 1995)</p> <p data-bbox="221 403 1439 448">http://www.pops.int/documents/background/assessreport/en/ritteren.pdf</p> <p data-bbox="221 448 1439 492">CAS Number : 002385-85-5</p> <p data-bbox="221 492 1439 537">Chem Name : MIREX</p> <p data-bbox="221 537 1439 582">Mol Formula: C₁₀Cl₁₂</p> <p data-bbox="221 582 1439 627">Mol Weight : 545.55</p> <p data-bbox="221 627 1439 672">Melting Pt :</p> <p data-bbox="221 672 1439 716">Boiling Pt :</p> <p data-bbox="221 716 1439 761">Water Solubility:</p> <p data-bbox="221 761 1439 806">Value : 0.085 mg/L</p> <p data-bbox="221 806 1439 851">Temp : 25 deg C</p> <p data-bbox="221 851 1439 896">Type : EXP</p> <p data-bbox="221 896 1439 940">Ref : YALKOWSKY,SH & DANNENFELSER,RM (1992)</p> <p data-bbox="221 940 1439 985">Log P (octanol-water):</p> <p data-bbox="221 985 1439 1030">Value : 6.89</p> <p data-bbox="221 1030 1439 1075">Type : EXP</p> <p data-bbox="221 1075 1439 1120">Ref : VEITH,GD ET AL. (1979)</p> <p data-bbox="221 1120 1439 1164">Vapor Pressure:</p> <p data-bbox="221 1164 1439 1209">Value : 8E-007 mm Hg</p> <p data-bbox="221 1209 1439 1254">Temp : 25 deg C</p> <p data-bbox="221 1254 1439 1299">Type : EXP</p> <p data-bbox="221 1299 1439 1344">Ref : AUGUSTIJN-BECKERS,PWM ET AL. (1994)</p> <p data-bbox="221 1344 1439 1388">Henry's Law Constant:</p> <p data-bbox="221 1388 1439 1433">Value : 0.000811 atm-m³/mole</p> <p data-bbox="221 1433 1439 1478">Temp : 25 deg C</p> <p data-bbox="221 1478 1439 1523">Type : EXP</p> <p data-bbox="221 1523 1439 1568">Ref : YIN,C & HASSETT,JP (1986)</p> <p data-bbox="221 1568 1439 1612">Atmospheric OH Rate Constant:</p> <p data-bbox="221 1612 1439 1657">Value : 0 cm³/molecule-sec</p> <p data-bbox="221 1657 1439 1702">Temp : 25 deg C</p> <p data-bbox="221 1702 1439 1747">Type : EST</p> <p data-bbox="221 1747 1439 1792">Ref : MEYLAN,WM & HOWARD,PH (1993)</p> <p data-bbox="221 1792 1439 1836">Source; Syracuse Research Corporation (SRC)</p> <p data-bbox="221 1836 1439 1881">http://esc.syrres.com/interkow/webprop.exe?CAS=2385-85-5&submit=Submit+CAS</p> |

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| 1.8.2 | <p data-bbox="221 1767 1439 1809">Description of toxicological properties of the chemical</p> <p data-bbox="221 1809 1439 1854">(RTECS)</p> <p data-bbox="221 1854 1439 1899">LD50 Oral: 235mg/kg (Rat)</p> <p data-bbox="221 1899 1439 1944">LD50 Ski : 800mg/kg (Rabbit)</p> <p data-bbox="221 1944 1439 1989">LD50 Oral: 125mg/kg (Hamster)</p> |
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| 1.8.3 | Description of ecotoxicological properties of the chemical |
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PART II: FINAL REGULATORY ACTION

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| 2. FINAL REGULATORY ACTION | |
| 2.1 | The chemical is: <input checked="" type="checkbox"/> banned OR <input type="checkbox"/> severely restricted |
| 2.2 | Information specific to the final regulatory action |
| 2.2.1 | Summary of the final regulatory action Ban on manufacture, import, sale and use. |
| 2.2.2 | Reference to the regulatory document <ul style="list-style-type: none"> • Law Concerning the Evaluation of Chemical Substances and Regulation of their Manufacture, etc. (abbrev. the Chemical Substances Control Law) and its Enforcement Order • Agricultural Chemicals Regulation Law and Ministerial ordinance of Ministry of Agriculture, Forestry and Fisheries, Ministerial Order of March 5, 2003. |
| 2.2.3 | Date of entry into force of the final regulatory action <ul style="list-style-type: none"> • Law Concerning the Evaluation of Chemical Substances and Regulation of their Manufacture, etc.: September 4, 2002 • Ministerial ordinance of Ministry of Agriculture, Forestry and Fisheries: March 10, 2003. |

| | |
|------------|---|
| 2.3 | Was the final regulatory action based on a risk or hazard evaluation? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| | If yes, give information on such evaluation <p>The government of Japan anticipates that persistent and highly bio-accumulative chemical substances with long-term toxicity (e.g. PCBs) may cause irreversible environmental pollution and have adverse effects on human health or environment.</p> <p>In order to prevent environmental pollution, the Chemical Substances Control Law stipulates that hazardous properties of chemicals should be checked based on the existing knowledge or by the tests which are consistent with the methods of the OECD Test Guidelines, conducted by the OECD GLP facilities.</p> <p>If persistent and highly bio-accumulative properties with long-term toxicity are detected from chemical substances, they are classified as Class I Specified Chemical Substances and are subject to the final regulatory action (ban on manufacture, import, and use).</p> |
| | Reference to the relevant documentation The result of Inspection for safety of existing chemical substances by the government of Japan The METI official bulletin |

| | | |
|--------------|---|---|
| 2.4 | Reasons for the final regulatory action | |
| 2.4.1 | Is the reason for the final regulatory action relevant to the human health? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| | If yes, give summary of the known hazards and risks presented by the chemical to human health, including the health of consumers and workers | |
| | It is based on the result that existing toxic data were evaluated synthetically. | |
| | Reference to the relevant documentation | |
| | Internal documents at the time of the examination. | |
| | Expected effect of the final regulatory action | |
| | Should result in reduced human exposure to this substance as its use is phased out. | |

| | | |
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| 2.4.2 | Is the reason for the final regulatory action relevant to the environment? | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No |
| | If yes, give summary of the known hazards and risks to the environment | |
| | Reference to the relevant documentation | |
| | Expected effect of the final regulatory action | |

| | | |
|--------------|--|--|
| 2.5 | Category or categories where the final regulatory action has been taken | |
| 2.5.1 | Final regulatory action has been taken for the chemical category | <input checked="" type="checkbox"/> Industrial |
| | Use or uses prohibited by the final regulatory action | |
| | All uses | |
| | Use or uses that remain allowed | |
| | n/a | |

| | | |
|--------------|---|---|
| 2.5.2 | Final regulatory action has been taken for the chemical category | <input checked="" type="checkbox"/> Pesticide |
| | Formulation(s) and use or uses prohibited by the final regulatory action | |
| | All uses | |

| | |
|--|---|
| | Formulation(s) and use or uses that remain allowed |
| | n/a |

| 2.5.3 Estimated quantity of the chemical produced, imported, exported and used, where available. | | |
|---|-------------------------------|-------------|
| | Quantity per year (MT) | Year |
| Produced | n/a | |
| Imported | n/a | |
| Exported | n/a | |
| Used | n/a | |

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| 2.6 | Indication, to the extent possible, of the likely relevance of the final regulatory action to other states and regions |
| | |

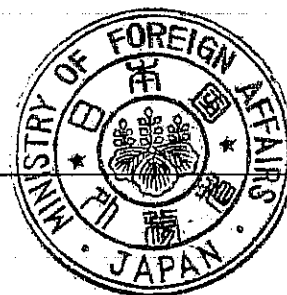
| | |
|--------------|--|
| 2.7 | Other relevant information that may cover: |
| 2.7.1 | Assessment of socio-economic effects of the final regulatory action |
| | |

| | |
|--------------|---|
| 2.7.2 | Information on alternatives and their relative risks |
| | |
| 2.7.3 | Relevant additional information |
| | |

PART III : GOVERNMENT AUTHORITIES

| Ministry/Department and authority responsible for issuing/enforcing the final regulatory action | |
|---|---|
| Institution | Ministry of Economy, Trade and Industry (METI) Ministry of the Environment (MOE) Ministry of Agriculture, Forestry and Fisheries (MAFF) Ministry of Health, Labour and Welfare (MHLW) |
| Address | METI: 1-3-1 Kasumigaseki, Chiyoda-ku, Tokyo 100-8901, Japan MOE: 1-2-2 Kasumigaseki, Chiyoda-ku, Tokyo 100-8975, Japan MAFF: 1-2-1 Kasumigaseki, Chiyoda-ku, Tokyo 100-8950, Japan MHLW: 1-2-2 Kasumigaseki, Chiyoda-ku, Tokyo 100-8901, Japan |
| Telephone | METI: +81-3-3501-0080 MOE: +81-3-5521-8253 MAFF: +81-3-3501-3965 MHLW: +81-3-3595-2298 |
| Telefax | METI: +81-3-3580-6347 MOE: +81-3-3581-3370 MAFF: +81-3-3501-3774 MHLW: +81-3-3593-8913 |
| E-mail address | |
| Designated National Authority | |
| Institution | Global Environment Division Ministry of Foreign Affairs |
| Address | 2-2-1 Kasumigaseki, Chiyoda-ku, Tokyo 100-8919, Japan |
| Name of person in charge | Mr. Koichi Ito |
| Position of person in charge | Director |
| Telephone | +81-3-5501-8245 |
| Telefax | +81-3-5501-8244 |
| E-mail address | koichi.ito@mofa.go.jp |

Date, signature of DNA and official seal: 01.09.2004 伊藤康一





**FORM
FOR NOTIFICATION OF FINAL REGULATORY ACTION
TO BAN OR SEVERELY RESTRICT A CHEMICAL**

IMPORTANT: See instructions before filling in the form

COUNTRY: BULGARIA

PART I: PROPERTIES, IDENTIFICATION AND USES

| | | |
|--------------------------------|--|---|
| 1. IDENTITY OF CHEMICAL | | |
| 1.1 | Common name | Mirex |
| 1.2 | Chemical name according to an internationally recognized nomenclature (e.g. IUPAC), where such nomenclature exists | Dodecachloropentacyclo[5.2.1.0 ^{2,6} .0 ^{3,9} .0 ^{5,8}]decane |
| 1.3 | Trade names and names of preparations | |
| 1.4 | Code numbers | |
| 1.4.1 | CAS number | 2385-85-5 |
| 1.4.2 | Harmonized System customs code | 2903 59 90 |
| 1.4.3 | Other numbers (specify the numbering system) | 219-196-6 (EC №) 602-077-00-1 (Index №) |

| | |
|--|---|
| 1.5 Indication regarding previous notification on this chemical, if any | |
| 1.5.1 | <input checked="" type="checkbox"/> This is a first time notification of final regulatory action on this chemical. |
| 1.5.2 | <input type="checkbox"/> This is a modification of a previous notification of final regulatory action on this chemical. The sections modified are: _____ |
| | <input type="checkbox"/> This notification replaces all previously submitted notifications on this chemical. Date of issue of the previous notification: _____ |

PLEASE RETURN THE COMPLETED FORM TO:

Secretariat for the Rotterdam Convention
Plant Protection Service
Plant Production and Protection Division, FAO
Viale delle Terme di Caracalla
00100 Rome, Italy

OR

Secretariat for the Rotterdam Convention
UNEP Chemicals

11-13, Chemin des Anémones
CH - 1219 Châtelaine, Geneva, Switzerland

Tel: (+39 06) 5705 3441
Fax: (+39 06) 5705 6347
E-mail: pic@fao.org

Tel: (+41 22) 917 8183
Fax: (+41 22) 797 3460
E-mail: pic@unep.ch

| 1.6 Information on hazard classification where the chemical is subject to classification requirements | |
|---|---|
| International classification systems | Hazard class |
| IARC | Group 2B: possibly carcinogenic to humans. |
| Other classification systems | Hazard class |
| EU | Carc. Cat. 3; R40 (Limited evidence of a carcinogenic effect) Repr. Cat. 3; R62 (Possible risk of impaired fertility.) R63 (Possible risk of harm to the unborn child.) R64 (May cause harm to breastfed babies.) Xn; R21/22 (Harmful in contact with skin and if swallowed.) N; R50/53 (Very toxic to aquatic organisms, may cause long-term adverse effects in the aquatic environment.) |

| 1.7 Use or uses of the chemical | |
|---------------------------------|--|
| 1.7.1 | X Pesticide |
| | Describe the uses of the chemical as a pesticide in your country: |
| | Mirex has never been imported, manufactured, registered or used in the country as a pesticide. |
| 1.7.2 | Ø Industrial |
| | Describe the industrial uses of the chemical in your country: |
| | |

| 1.8 Properties | |
|----------------|--|
| 1.8.1 | Description of physico-chemical properties of the chemical |
| | <p>Mirex is a white crystalline, odourless solid with a melting point of 485 °C. It is soluble in several organic solvents including tetrahydrofuran (30%), carbon disulfide (18%), chloroform (17%) and benzene (12%), but is practically insoluble in water. It has a vapour pressure at 25 °C of 3×10^{-7} mm.</p> <p>Mirex is considered to be extremely stable. It does not react with sulfuric, nitric, hydrochloric or other common acids and is unreactive with bases, chlorine or ozone. Despite its stability, reductive dechlorination of mirex can be brought about by reaction with reduced iron porphyrin or more effectively by vitamin B₁₂. Slow partial decomposition will also result from UV irradiation in hydrocarbon solvents or from gamma rays. Dechlorination by UV irradiation yields photomirex (8-monohydromirex) as a major product and this may represent the fate of most of the mirex in the environment.</p> <p>Mirex is quite resistant to pyrolysis; decomposition begins at 525°C, and 99-98% combustion is accomplished at 700°C within 1 second. Hexachlorobenzene is a major pyrolysis product with lesser amounts of carbon monoxide, carbon dioxide, hydrogen chloride, chlorine, carbon tetra-chloride, and phosgene given off as vapour.</p> |
| 1.8.2 | Description of toxicological properties of the chemical |
| | <p>Food probably represents the major source of intake of mirex for the general population, fish, wild game, and meat being the main sources. Normally, such intake is below established residue tolerances. Mirex may occur in breast milk, but levels are very low or below detection limits.</p> <p>Following oral ingestion, mirex is only partly absorbed into the body and the remainder, depending on the dose administered, is eliminated unchanged in the faeces. Mirex can also be absorbed following inhalation and via the skin.</p> <p>It is a lipophilic compound and, as such, is stored in adipose tissue to a greater extent than in any other tissue. Mirex is transferred across the placenta to the fetus and is excreted with the milk.</p> <p>Mirex does not appear to have been metabolized to any extent in any animal species investigated. Its elimination from the body is slow and, depending on the species, it has a half-life in the body of several months.</p> |

| | |
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| | <p>It is one of the most stable pesticides in use today.</p> <p>Mirex was moderately toxic in single-dose animal studies (oral LD₅₀ values ranged from 365 to 3000 mg/kg body weight). Toxic effects included neurological symptoms, especially tremors and convulsions.</p> <p>The most sensitive effects of repeated exposure in experimental animals are principally associated with the liver (liver hypertrophy with morphological changes in the liver cells, and induction of mixed-function oxidases). These effects have been observed with doses as low as 1 mg/kg diet (0.05 mg/kg body weight per day), the lowest dose tested.</p> <p>In studies to investigate the toxicity of mirex in pregnant animals, teratogenic effects were seen in rats given 6 mg/kg body weight per day by gavage, and fetotoxic effects were seen in animals given 25 mg/kg diet. In addition, exposure of male mice to dietary levels of about 2 mg/kg for 3 months resulted in impaired reproductive performance.</p> <p>Mirex was not generally active in short-term tests for genetic activity. However, mirex is carcinogenic for both mice and rats.</p> |
| 1.8.3 | <p>Description of ecotoxicological properties of the chemical</p> <p>Mirex is one of the most stable chemicals in use today. Biodegradation by microorganisms does not take place except, occasionally, under anaerobic conditions, and, even then, at a slow rate.</p> <p>Photodegradation under the influence of UV radiation is slow, photomirex (8-monohydromirex) being the major degradation product. The environmental half-life of mirex is of the order of many years, and its breakdown products are equally stable.</p> <p>Because it is practically insoluble in water, sediments act as a sink for mirex that enters waterways. Mirex bioaccumulates at all trophic levels and is biomagnified through food chains.</p> <p>Long-term toxicity, with delayed onset of toxic effects and mortality is uniformly high. Mirex is toxic for a range of aquatic organisms, with crustacea being particularly sensitive.</p> <p>Thus, it appears that mirex presents a long-term environmental hazard.</p> |

PART II: FINAL REGULATORY ACTION

| | | |
|--------------|--|-----------------|
| 2. | FINAL REGULATORY ACTION | |
| 2.1 | The chemical is: | X banned |
| 2.2 | Information specific to the final regulatory action | |
| 2.2.1 | Summary of the final regulatory action | |
| | <p>It is prohibited to production, use and place on the market all plant protection products containing Mirex according to annual adopted list of active ingredients banned for use in plant protection products under the Plant Protection Act, as well as in compliance with art.3, par.1 (a) of the Stockholm Convention on persistent organic pollutants. Mirex is designated as a PIC chemical. (Annex I of the Regulation on the import and export of certain dangerous chemicals on the Bulgarian territory). The chemical is listed in Annex II of this Regulation as prohibited for export from and import into the country.</p> | |
| 2.2.2 | Reference to the regulatory document | |
| | <ul style="list-style-type: none"> - Ratification Act on the Stockholm Convention on persistent organic pollutants (SG 89 of 12.10.2004); - Plant Protection Act (SG 91 of 10.10.1997, as amended in SG 90 of 15.10.1999, as amended in SG 96 of 09.11.2001, as amended in SG 18 of 05.03.2004); - Joint Order № № № RD 12-28/21.05.2004 of Minister of Agriculture and Forestry; RD 09-457/13.07.2004 of Minister of Health; RD-590/15.06.2004 of Minister of Environment and Water, for approval of annual list of active ingredients banned for plant protection products according to Article 15g of Plant Protection Act; - Regulation on the import and export of certain dangerous chemical substances, preparations and products on the Bulgarian territory (SG 66 of 9 July 2002), repealed by Regulation on the import and export of certain dangerous chemicals on the Bulgarian territory (SG 63 of 20 July 2004, in force since 1st January 2005). | |
| 2.2.3 | Date of entry into force of the final regulatory action | |
| | 2004 | |

| | | | |
|------------|--|---------------------------|-------------------------------------|
| 2.3 | Was the final regulatory action based on a risk or hazard evaluation? | <input type="radio"/> Yes | <input checked="" type="radio"/> No |
| | If yes, give information on such evaluation | | |

| | |
|--|--|
| | Reference to the relevant documentation |
| | |

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|--|---|
| 2.4 Reasons for the final regulatory action | |
| 2.4.1 | <p>Is the reason for the final regulatory action relevant to the human health? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If yes, give summary of the known hazards and risks presented by the chemical to human health, including the health of consumers and workers</p> <p>Mirex is toxic by mouth, by skin contact (especially liquid formulations), and by inhalation of dust from powder concentrates. It acts as a stimulant of the central nervous system. Following accidental ingestion or over-exposure, symptoms may include headache, dizziness, nausea, vomiting, weakness in the legs, and convulsions.</p> <p>Organochlorines can cause respiratory depression. They also sensitize the heart to endogenous catecholamines leading to ventricular fibrillation and cardiac arrest in severe cases. Respiratory depression may lead to metabolic acidosis and, if necessary, blood gases should be checked. The use of an ECG monitor is recommended if the symptoms are severe.</p> <p>Reference to the relevant documentation</p> <p>HSG No.39, 1990, IPCS</p> <p>Expected effect of the final regulatory action</p> <p>Decrease of hazards and risks to human health.</p> |
| 2.4.2 | <p>Is the reason for the final regulatory action relevant to the environment? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No</p> <p>If yes, give summary of the known hazards and risks to the environment</p> <p>Mirex is one of the most stable of the organochlorine insecticides. Although general environmental levels are low, it is widespread in the biotic and abiotic environment. Mirex is both accumulated and biomagnified. It is strongly adsorbed on sediments and has low water solubility. Delayed onset of toxic effects and mortality is typical of mirex poisoning. The long-term toxicity of mirex is uniformly high. Mirex is toxic for a range of aquatic organisms, crustacea being particularly sensitive.</p> <p>Although no field data are available, the adverse effects of long-term exposure to low levels of mirex, combined with its persistence, suggest that the use of mirex presents a long-term environmental risk.</p> <p>Reference to the relevant documentation</p> <p>HSG No.39, 1990, IPCS</p> <p>Expected effect of the final regulatory action</p> <p>To avoid and reduce exposure, hazards and risks of the chemical to the environment.</p> |

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| 2.5 Category or categories where the final regulatory action has been taken | |
| 2.5.1 | <p>Final regulatory action has been taken for the chemical category <input type="checkbox"/> Industrial</p> <p>Use or uses prohibited by the final regulatory action</p> <p>Use or uses that remain allowed</p> |
| 2.5.2 | <p>Final regulatory action has been taken for the chemical category <input checked="" type="checkbox"/> Pesticide</p> <p>Formulation(s) and use or uses prohibited by the final regulatory action</p> <p>All formulations and uses are prohibited.</p> <p>Formulation(s) and use or uses that remain allowed</p> <p>None</p> |

| | | |
|---|-------------------------------|-------------|
| 2.5.3 Estimated quantity of the chemical produced, imported, exported and used, where available. | | |
| | Quantity per year (MT) | Year |
| Produced | - | |
| Imported | - | |
| Exported | - | |
| Used | - | |

| | |
|--------------|---|
| 2.6 | Indication, to the extent possible, of the likely relevance of the final regulatory action to other states and regions |
| | |
| 2.7 | Other relevant information that may cover: |
| 2.7.1 | Assessment of socio-economic effects of the final regulatory action |
| 2.7.2 | Information on alternatives and their relative risks Carbaryl, Deltamethrin |
| 2.7.3 | Relevant additional information |

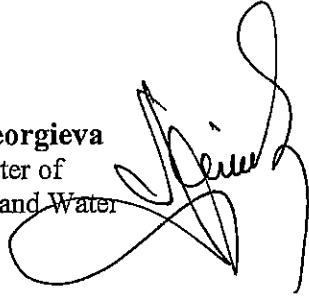
PART III: GOVERNMENT AUTHORITIES

| Ministry/Department and authority responsible for issuing/enforcing the final regulatory action | |
|--|--|
| Institution | Ministry of Environment and Water |
| Address | Bulgaria 1000, Sofia 67, William Gladstone Str. |
| Telephone | + 359 2 940 60 21 |
| Telefax | + 359 2 981 33 84 |
| E-mail address | pluleva@moew.government.bg |
| Designated National Authority (CP) | |
| Institution | Ministry of Environment and Water |
| Address | Bulgaria 1000, Sofia 67, William Gladstone Str. |
| Name of person in charge | Mrs. Parvoleta Luleva |
| Position of person in charge | Chief expert at "Operative Control and Management of Dangerous Chemicals" Department; Directorate "Coordination of Regional Inspectorates of Environment and Water" |
| Telephone | + 359 2 940 60 21 |
| Telefax | + 359 2 981 33 84 |
| E-mail address | pluleva@moew.government.bg |

| Ministry/Department and authority responsible for issuing/enforcing the final regulatory action | |
|--|---|
| Institution | Ministry of Agriculture and Forestry |
| Address | Bulgaria 1040, Sofia 55, Hristo Botev Blvd. |
| Designated National Authority (P) | |
| Institution | National Plant Protection Service, Ministry of Agriculture and Forestry |
| Address | Bulgaria 1606, Sofia 17, Hristo Botev Blvd. |
| Name of person in charge | Mr. Stefan Uzunov |
| Position of person in charge | Head of "International Cooperation" Sector National Plant Protection Service |

| | |
|----------------|--------------------------|
| Telephone | +359 2 953 33 60 |
| Telefax | +359 2 95 333 60 |
| E-mail address | s.uzunov@mbox.infotel.bg |

Manoela Georgieva
Deputy Minister of
Environment and Water



15 June 2005

Petar Nikolov
Director General of
National Plant Protection
Service

