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November 7th , 2017

Jocelyne Beaudet
Panel Chair
Roberts Bank Terminal 2 Review Panel
Panel.RBT2@ceaa.gc.ca

Subject: Health Canada's Response to Information Request (HC IR-03) for *Roberts Bank Terminal 2 Project*

Dear Ms. Beaudet:

Thank you for your letter to Deputy Minister Simon Kennedy, dated September 27, 2017. I am pleased to provide the accompanying table and attachments in response to your information request (HC IR-03) regarding the Roberts Bank Terminal 2 Project.

Sincerely,

<Original signed by>

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Attachments:
2017-09-27-RBT2 Panel IR #3 to HC.pdf
2017-09-27-RBT2 IR #3-HC response table to panel.pdf
2016-10-07-Copper pesticides-re-evaluation decision.pdf
2016-05-02-Copper pesticides-proposed re-evaluation decision.pdf
2002-06-12-Tributyltin antifouling paints-special review decision.pdf

cc: Chantal Roberge, A/Director, Environmental Health Program, Regulatory Operations and Regions Branch, Health Canada

Canada

Information Request to Health Canada – September 27, 2017

IR #	Topic	Information Source(s)	Context	Information Request	HC PMRA Response
HC IR-03	Anti-Fouling Agents	Transport Canada Response to Information Request TC IR-03 (CEAR Doc#982)	In its response to TC IR-03 (CEAR Doc#982), Transport Canada indicated that Health Canada has regulatory responsibilities with respect to the sale and use of pesticides in Canada – including anti-fouling agents – through its Pesticide Compliance Program and the Pest Management Regulatory Agency. Information is required to determine if and how this compliance program and regulatory agency may be relevant to the environmental assessment of the proposed Project and marine shipping associated with the Project.	Provide a description of how the following regulatory bodies and instruments operate in conjunction with sections 127 to 131 of the Vessel Pollution and Dangerous Chemicals Regulations to implement the provisions of the International Convention for the Control and Management of Harmful Antifouling Systems: • Pesticide Compliance Program; • Pest Management Regulatory Agency; and • any associated programs or regulations. Describe how the Pesticide Compliance Program and the Pest Management Regulatory Agency are of relevance to the environmental assessment of the proposed Project and marine shipping associated with the Project.	In Canada, pesticides are regulated under the Pest Control Products Act (PCPA) administered by Health Canada's Pest Management Regulatory Agency (PMRA). The number one priority of the PMRA is to protect the health and safety of Canadians and their environment. Before a pesticide is allowed to be used or sold in Canada, it must undergo a rigorous scientific assessment process that provides reasonable certainty that no harm, including chronic effects such as cancer, will occur when pesticides are used according to label directions. Results from more than 200 types of scientific studies must be submitted to determine if the pesticide would have any negative effect on people, animals (including birds and insects), or plants, including organisms in the soil and water. In the case of antifouling paints for use on underwater structures and materials (i.e. boat and ship hulls), data to evaluate health and environmental risk include studies specific to marine environments (marine algae, marine vascular plants, etc.). Once a pesticide has been granted registration status, it becomes subject to a system of post-market risk management controls under the PCPA. This includes re-evaluations and special reviews of registered pesticides, compliance and enforcement activities, and response to health and environmental incidents, management approaches, and outreach activities targeted at users. Historically, tributyltin was registered for use as an antifouling paint, but this use was cancelled in 2002 following a special review. This cancellation was due to risks to the Canadian environment and to be consistent with the International Marine Organization Convention. Today, antifouling paints containing tributyltin are not registered under the PCPA; therefore they are not authorized under the PCPA for use, manufacturing, or distribution in Canada, as per Section 6(1) of the PCPA.

					Health Canada's Pesticide Compliance Program is responsible for conducting PCPA compliance and enforcement activities, including enforcing the prohibition on use, manufacturing or distribution of antifouling paints, including those that may contain tributyltin products. Neither of the Health Canada entities noted in the Information Request (i.e., PMRA, Pesticide Compliance Program) are authorized to enforce the Vessel Pollution and Dangerous Chemicals Regulations (VPDCR) which are within the domain of Transport Canada. However, prohibition of use, import and distribution of antifouling paint products containing tributyltin under Section 6(1) of the PCPA is consistent with the restrictions on use of antifouling systems containing organotin compounds that act as a biocide under Section 127(1) of the VPDCR. Regarding other antifouling products, there are currently three active ingredients registered for use in antifouling paints and approved for use to be applied to ship hulls. These active ingredients are copper-based, namely cuprous oxide, copper thiocyanate and metallic copper. The PMRA re-evaluated these substances in 2016 taking into account Canadian antifoulant use patterns and determined that they do not present unacceptable risks to the environment when used according to label directions. The attached documents provide some background regarding the regulatory decisions mentioned in this note, including health and/or environmental aspects that may be relevant to the environmental assessment of the proposed Roberts Bank Terminal 2 Project (the Project) and marine shipping associated with the Project.

Re-evaluation Decision RVD2016-09

Copper Pesticides Environmental Assessment of Wood Preservative, Material Preservative and Antifouling Uses

(publié aussi en français)

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Re-evaluation Decision

Cuprous oxide, copper hydroxide, metallic copper and copper present as mixed ethanolamine complexes are registered in Canada as wood preservatives (for example remedial), material preservatives (shingles and non-food contact surfaces) and/or antifouling coatings (such as boat/ship hulls/bottoms and aquaculture equipment). There are numerous copper-containing pesticide products that are currently registered in Canada under the authority of the *Pest Control Products Act*, including technical grade active ingredients, a manufacturing concentrate, commercial and domestic class end-use products.

After a re-evaluation of copper-containing pesticide products, Health Canada's Pest Management Regulatory Agency (PMRA), under the authority of the *Pest Control Products Act*, is granting continued registration of copper-containing pesticide products for sale and use in Canada. An evaluation of available scientific information found that copper-containing pesticide products do not present unacceptable risks to human health or the environment when used according to the requirements of continued registration listed below, which include revised label directions for all products. Appendix I lists the required label amendments, and Appendix II lists currently registered copper-containing pesticide products. No additional data are requested at this time.

Requirements for continued registration

- Additional health-related statements to meet current labelling standards
- Updated environmental hazards statements to meet current labelling standards

The PMRA's pesticide re-evaluation program considers potential risks, as well as value, of pesticide products to ensure they meet modern standards established to protect human health and the environment. Regulatory Directive DIR2001-03, *PMRA Re-evaluation Program*, presents the details of the re-evaluation activities and program structure. Re-evaluation draws on data from registrants, information from other regulatory agencies and any other relevant information available.

This re-evaluation decision[1] was proposed in the consultation document, Proposed Re-evaluation Decision PRVD2016-14, *Copper Pesticides Environmental Assessment of Wood Preservative, Material Preservative and Antifouling Uses*. No comments were received during the consultation process. Therefore, this decision is consistent with the proposed re-evaluation decision stated in PRVD2016-14. Please refer to both the Overview and more detailed Science Evaluation of PRVD2016-14 for the human health, environmental and value considerations underlying this re-evaluation decision.

A reference list for all data used as the basis for the re-evaluation decision is also included in PRVD2016-14.

[1] "Decision statement" as required by subsection 28(5) of the *Pest Control Products Act*.

To comply with this decision, the required label statements must be implemented on all products labels sold by registrants no later than 24 months after the publication date of this document. Registrants of the copper-containing pesticide products will be informed of the specific requirements affecting their product registration(s) and of the regulatory options available to them.

Other Information

Any person may file a notice of objection[2] regarding this decision on copper-containing pesticide products within 60 days from the date of publication of this Re-evaluation Decision. For more information regarding the basis for objecting (which must be based on scientific grounds), please refer to the Pesticides and Pest Management portion of Health Canada's website (Request a Reconsideration of Decision) or contact the PMRA's Pest Management Information Service.

[2] As per subsection 35(1) of the *Pest Control Products Act*

Appendix I Label Amendments for Copper Products Containing Cuprous Oxide, Copper Hydroxide, Metallic Copper and Copper Present as Mixed Copper Ethanolamine Complexes

The label amendments presented below do not include all label requirements for individual end-use products, such as first aid statements, disposal statements, precautionary statements and supplementary protective equipment. Information on labels of currently registered products should not be removed unless it contradicts the label statements below.

DOMESTIC END-USE PRODUCT LABELS

The labels of domestic class end-use products registered for use as antifoulants or remedial wood preservatives in Canada must be amended to include the following statements.

A. For products registered for use as antifouling paints/coatings:

I) The following statement must be included in a section entitled **DIRECTIONS FOR USE**:

> **DO NOT** place the painted parts in water after painting until the paint is fully cured (see recommended times on the label). It is recommended that you prevent paint chips or dust caused by removing paint from entering water.

II) The following statement must be included in a section entitled **ENVIRONMENTAL HAZARDS**.

> Toxic to aquatic organisms.

B. For products registered for use as remedial wood preservatives:

I) The following statement must be included in a section entitled **DIRECTIONS FOR USE**:

> **DO NOT** apply this product to wood that will be used in water.

II) The following statement must be included in a section entitled **ENVIRONMENTAL HAZARDS**:

> Toxic to aquatic organisms.

COMMERCIAL END-USE PRODUCT LABELS

The labels of commercial class end-use products registered for use as antifoulants, wood preservatives or material preservatives in Canada must be amended to include the following statements.

A. For all products:

I) The following statements must be included in a section entitled **DIRECTIONS FOR USE**:

> **DO NOT** contaminate irrigation or drinking water supplies or aquatic habitats by cleaning of equipment or disposal of wastes.
>
> **DO NOT** apply this product directly to freshwater habitats (such as lakes, rivers, sloughs, ponds, prairie potholes, creeks, marshes, streams, reservoirs and wetlands), or estuarine/marine habitats.
>
> **DO NOT** discharge effluent containing this product or the biocide produced into sewer systems, lakes, streams, ponds, estuaries, oceans or other waters unless the effluent has been detoxified by suitable means.

II) The following statement must be included in a section entitled **ENVIRONMENTAL HAZARDS**:

> Toxic to aquatic organisms.

II) The following statement must be included in a section entitled **DISPOSAL**:

> Canadian manufacturers should dispose of unwanted active ingredients and containers in accordance with municipal or provincial regulations. For additional details and clean-up of spills, contact the manufacturer or the provincial regulatory agency.

B. For products registered for use as antifouling paints/coatings:

> The following statement must be included in a section entitled **DIRECTIONS FOR USE**:
>
> **DO NOT** place the painted parts in water after painting until the paint is fully cured (see recommended times on the label). It is recommended that you prevent paint chips or dust caused by removing paint from entering water.

C. For products registered for use as heavy-duty wood preservatives:

The following statements must be included in a section entitled **DIRECTIONS FOR USE**:

Store treated lumber on a roofed drip pad until dripping has ceased. Slope lumber on the drip pad to expedite drainage and to ensure that no puddles remain on the surface of the wood. Manage drippage and other related wastes to prevent release in the environment.

Drip aprons must be roofed, paved and drained to prevent dilution and loss of treatment solution.

DO NOT expose treated lumber to rains immediately after treatment.

For further information on storage, handling, and disposal of treated wood, contact the manufacturer of this product or the provincial regulatory agency.

D. For products registered for use as remedial wood preservatives:

The following statement must be included in a section entitled **DIRECTIONS FOR USE**:

DO NOT apply this product to wood that will be used in water.

Appendix II Registered Cuprous Oxide, Copper Hydroxide, Metallic Copper and Copper Present as Mixed Copper Ethanolamine Complexes Products with Antifouling, Wood Preservative and/or Material Preservative Uses, as of 20 October 2015

Cuprous Oxide						
Registration Number	**Marketing Class**	**Registrant**	**Product Name**	**Formulation Type**	**Guarantee Cu_2O (Elemental) (%)**	**Product Type**
21241	TECHNICAL ACTIVE	AMERICAN CHEMET CORPORATION*	TECHNICAL HIGH PERFORMANCE CHEM COPP	DUST OR POWDER	88	Not applicable
21242	TECHNICAL ACTIVE	AMERICAN CHEMET CORPORATION*	TECHNICAL LOLO TINT 97	DUST OR POWDER	88	Not applicable
21243	TECHNICAL ACTIVE	AMERICAN CHEMET CORPORATION*	TECHNICAL PURPLE COPP 97N	DUST OR POWDER	88	Not applicable
21244	TECHNICAL ACTIVE	AMERICAN CHEMET CORPORATION*	RED COPP 97N TECHNICAL	DUST OR POWDER	88	Not applicable
22088	TECHNICAL ACTIVE	NORDOX INDUSTRIES A S*	NORDOX CUPROUS OXIDE POWDER	DUST OR POWDER	97.0	Not applicable
22327	TECHNICAL ACTIVE	SCM METAL PRODUCTS, INC.*	SCM METAL PRODUCTS CUPROUS OXIDE	DUST OR POWDER	88.44	Not applicable
29178	TECHNICAL ACTIVE	AMERICAN CHEMET CORPORATION*	RED PREMIUM TECHNICAL	DUST OR POWDER	88	Not applicable
21351	DOMESTIC	INTERNATIONAL PAINT LLC.*	MICRON CSC (VARIOUS COLOURS)	SUSPENSION	36 (33)	Antifouling Coating
21352	DOMESTIC	INTERNATIONAL PAINT LLC.*	MICRON CSC (SHARK WHITE)	SUSPENSION	36 (33)	Antifouling Coating
21354	DOMESTIC	INTERNATIONAL PAINT LLC.*	BOTTOMKOTE XXX (VARIOUS COLOURS)	SUSPENSION	28.15 (25)	Antifouling Coating
21355	DOMESTIC	INTERNATIONAL PAINT LLC.*	BOTTOMKOTE (VARIOUS COLOURS)	SUSPENSION	44.14 (39.2)	Antifouling Coating
22022	DOMESTIC	INTERNATIONAL PAINT LLC.*	VC-OFFSHORE (BLUE, RED, BLACK)	SUSPENSION	41.66 (37.15)	Antifouling Coating
22718	DOMESTIC	INTERNATIONAL PAINT LLC.*	C-SHIELD (RED)	SOLUTION	10.13 (9)	Antifouling Coating
22727	DOMESTIC	INTERNATIONAL PAINT LLC.*	C-SWIFT (BLUE, RED, BLACK)	SUSPENSION	38%	Antifouling Coating
22728	DOMESTIC	INTERNATIONAL PAINT LLC.*	C-UNION JACK (RED)	SUSPENSION	(17.87)	Antifouling Coating
22820	DOMESTIC	INTERNATIONAL PAINT LLC.*	UNION JACK ANTIFOULING PAINT: RED NAU662	SUSPENSION	22%	Antifouling Coating
24389	DOMESTIC	INTERNATIONAL PAINT LLC.*	AQUARIUS (VARIOUS COLOURS)	SUSPENSION	49.73 (44.17)	Antifouling Coating
24392	DOMESTIC	INTERNATIONAL PAINT LLC.*	BOTTOMKOTE HS (VARIOUS COLOURS)	SOLUTION	42.67 (37.90)	Antifouling Coating
24393	DOMESTIC	INTERNATIONAL PAINT LLC.*	MICRON CSC EXTRA (VARIOUS COLOURS)	SUSPENSION	37.04 (32.09)	Antifouling Coating

Cuprous Oxide						
Registration Number	**Marketing Class**	**Registrant**	**Product Name**	**Formulation Type**	**Guarantee Cu_2O (Elemental) (%)**	**Product Type**
24394	DOMESTIC	INTERNATIONAL PAINT LLC.*	ULTRA-KOTE EXTRA (RED, BLUE)	SOLUTION	72.18 (64.10)	Antifouling Coating
24395	DOMESTIC	INTERNATIONAL PAINT LLC.*	ULTRA-KOTE (RED, GREEN, BLUE, BLACK, BROWN)	SOLUTION	65.71 (58.36)	Antifouling Coating
26709	DOMESTIC	INTERNATIONAL PAINT LLC.*	BOTTOMKOTE ACT (VARIOUS COLOURS)	SOLUTION	41.97	Antifouling Coating
27574	DOMESTIC	INTERNATIONAL PAINT LLC.*	VINY-LUX (BLACK, GREEN, BLUE)	SUSPENSION	33.78 (30)	Antifouling Coating
27575	DOMESTIC	INTERNATIONAL PAINT LLC.*	VINY-LUX (RED)	SUSPENSION	42.79 (38)	Antifouling Coating
21378	COMMERCIAL	INTERNATIONAL PAINT LLC.*	INTERSPEED BLA110 PREMIUM RED (ZA463003)	SUSPENSION	23.65 (21.0)	Antifouling Coating
21379	COMMERCIAL	INTERNATIONAL PAINT LLC.*	UNION JACK BCA350 COPPER RED (ZA469005)	SUSPENSION	17.86	Antifouling Coating
21397	COMMERCIAL	INTERNATIONAL PAINT LLC.*	INTERCLENE BRA542 BLACK (ZA467003) & BRA540 RED (ZA463007)	SOLUTION	38.28 (34)	Antifouling Coating
21652	COMMERCIAL	INTERNATIONAL PAINT LLC.*	EPOXYCOP	SUSPENSION	37.3	Antifouling Coating
21656	COMMERCIAL	HEMPEL (CANADA) INC.*	HEMPEL'S ANTIFOULING OLYMPIC 7660-5111 RED	SUSPENSION	45.31 (40.24)	Antifouling Coating
21657	COMMERCIAL	HEMPEL (CANADA) INC.*	HEMPEL'S ANTIFOULING OLYMPIC 7660-5030 LIGHT RED	SUSPENSION	45.31 (40.24)	Antifouling Coating
21658	COMMERCIAL	HEMPEL (CANADA) INC.*	HEMPEL'S ANTIFOULING OLYMPIC 7660-1999 BLACK	SUSPENSION	45.31 (40.24)	Antifouling Coating
21840	COMMERCIAL	INTERNATIONAL PAINT LLC.*	WEST MARINE BOTTOMSHIELD ANTIFOULING BOTTOM PAINT (VARIOUS COLOURS)	SOLUTION	42.56 (37.8)	Antifouling Coating
21841	COMMERCIAL	INTERNATIONAL PAINT LLC.*	TARR & WONSON COPPER PAINT RED 503-C	SOLUTION	25.67 (22.8)	Antifouling Coating
21986	COMMERCIAL	FLEXABAR CORP.*	FLEXGARD XI WATERBASE PRESERVATIVE	EMULSIFIABLE CONCENTRATE OR EMULSION	24.64	Antifouling Coating
22717	COMMERCIAL	INTERNATIONAL PAINT LLC.*	INTERSPEED 640 ANTIFOULING SERIES (OCEAN GREEN, RED, BLACK, BLUE)	SOLUTION	42.79 (38)	Antifouling Coating
23511	COMMERCIAL	SOCIETE LAURENTIDE INC	ATLANTIC ANTIFOULING PAINT COPPER BOTTOM RED	SUSPENSION	8.78	Antifouling Coating
23511.01	COMMERCIAL	SOCIETE LAURENTIDE INC	MATCHLESS SUPER MARINE	SUSPENSION	8.78	Antifouling Coating

Cuprous Oxide						
Registration Number	**Marketing Class**	**Registrant**	**Product Name**	**Formulation Type**	**Guarantee Cu_2O (Elemental) (%)**	**Product Type**
23803	COMMERCIAL	FLEXABAR CORP.*	FLEXGARD VI WATERBASE PRESERVATIVE	EMULSIFIABLE CONCENTRATE OR EMULSION	14.26	Antifouling Coating
24097	COMMERCIAL	KOP-COAT INC.*	WEST MARINE CPP! PLUS ABLATIVE ANTIFOULING PAINT (BLUE, RED, BLACK, GREEN)	SUSPENSION	44.0	Antifouling Coating
24390	COMMERCIAL	INTERNATIONAL PAINT LLC.*	INTERCLENE 140 BWA 360 ANTIFOULING RED	SOLUTION	38.2 (33.93)	Antifouling Coating
24391	COMMERCIAL	INTERNATIONAL PAINT LLC.*	INTERSPEED 6200NA BQA654 ANTIFOULING RED	SOLUTION	21.73	Antifouling Coating
24409	COMMERCIAL	FLEXDEL CORP	AQUAGARD WATERBASE ANTIFOULING BOTTOM BOAT PAINT	SUSPENSION	23.6	Antifouling Coating
25788	COMMERCIAL	JOTUN PAINTS INC.	ANTIFOULING SEAFORCE 200 AV (VARIOUS COLORS)	SUSPENSION	45.53	Antifouling Coating
25809	COMMERCIAL	ARCH WOOD PROTECTION CANADA CORP*	CHEMONITE WOOD PRESERVATIVE	SOLUTION	5.19	Heavy Duty Wood Preservative
26589	COMMERCIAL	PPG ARCHITECTURAL FINISHES INCORPORATED*	AMERCOAT ABC #4 ANTIFOULING PAINT	SUSPENSION	27.1	Antifouling Coating
26907	COMMERCIAL	SASOL WAX GMBH*	NETREX AF MICRO CRYSTALLINE WAX	EMULSIFIABLE CONCENTRATE OR EMULSION	17	Antifouling Coating
26991	COMMERCIAL	PPG ARCHITECTURAL FINISHES INCORPORATED*	AMERCOAT ABC #3 ANTIFOULING PAINT RED	SUSPENSION	42	Antifouling Coating
27098	COMMERCIAL	INTERNATIONAL PAINT LLC.*	INTERCLENE BRA 570 ANTIFOULING SERIES	SUSPENSION	37.2 (32.9)	Antifouling Coating
27277	COMMERCIAL	KOP-COAT INC.*	HORIZONS ABLATIVE ANTIFOULING BOTTOM PAINT	SUSPENSION	44.0	Antifouling Coating
27573	COMMERCIAL	INTERNATIONAL PAINT LLC.*	123 PAINT VINYL ANTIFOULING (ZA469033)	SUSPENSION	67.6 (60)	Antifouling Coating
28046	COMMERCIAL	IKO INDUSTRIES LTD*	AR GRANULES (ALGAE-RESISTANT ROOFING GRANULES)	GRANULAR	4.07	Material Preservative
31458	COMMERCIAL	FLEXDEL CORP	AQUAGARD WATERBASE ANTIFOULING RUBBER INFLATABLE BOAT PAINT	SUSPENSION	23.6	Antifouling Coating

Copper Hydroxide						
Registration Number	**Marketing Class**	**Registrant**	**Product Name**	**Formulation Type**	**Guarantee (Elemental) (%)**	**Product Type**
24670	TECHNICAL ACTIVE	NUFARM AGRICULTURE INC.*	CHAMPION TECHNICAL	SOLID	57.3	Not applicable
27503	TECHNICAL ACTIVE	E.I. DU PONT CANADA COMPANY*	KOCIDE COPPER HYDROXIDE TECHNICAL	SOLID	61	Not applicable
30390	TECHNICAL ACTIVE	ALBAUGH INC.*	COPPER HYDROXIDE MUP	SOLID	60.6	Not applicable
31374	TECHNICAL ACTIVE	NUFARM AGRICULTURE INC.*	CHAMPION WET CAKE TECHNICAL	SOLID	32.5	Not applicable
29255	MANUFACTURING CONCENTRATE	SEPRO CORPORATION*	SPIN OUT 260 MANUFACTURING CONCENTRATE	SUSPENSION	12.8	Not applicable
27214	DOMESTIC	GENICS INC.*	GENICS POSTGUARD	SOLID	1.71	Remedial Wood Preservative
25580	COMMERCIAL	GENICS INC.*	COBRA (TM) ROD	SOLID	1.8	Remedial Wood Preservative
27553	COMMERCIAL	GENICS INC.*	COBRA (TM) CRUSH MDT WOOD PRESERVATIVE	SOLUBLE POWDER	6.1	Wood Preservative
31806	COMMERCIAL	GENICS INC.*	COBRA WRAP GEL	PASTE	2	Remedial Wood Preservative

Metallic Copper						
Registration Number	**Marketing Class**	**Registrant**	**Product Name**	**Formulation Type**	**Guarantee (label) (%)**	**Product Type**
27903	TECHNICAL ACTIVE	ECKART GMBH	COPPER FLAKE TECHNICAL	DUST OR POWDER	99.1	Not applicable
31171	TECHNICAL ACTIVE	CANADIAN COPPER & BRASS DEVELOPMENT ASSOCIATION (CCBDA)*	COPPER TGAI	SOLID	99.98	Not applicable
31751	TECHNICAL ACTIVE	ARCH WOOD PROTECTION CANADA CORP*	COPPER TECHNICAL FLAKE	SOLID	99.9	Not applicable
21372	DOMESTIC	INTERNATIONAL PAINT LLC.*	FIBREGLASS BOTTOMKOTE RACING BRONZE	SOLUTION	28	Antifouling Coating
22020	DOMESTIC	INTERNATIONAL PAINT LLC.*	VC 17M	SUSPENSION	20.25	Antifouling Coating
31172	COMMERCIAL	CANADIAN COPPER & BRASS DEVELOPMENT ASSOCIATION (CCBDA)*	ANTIMICROBIAL COPPER ALLOYS GROUP I	SOLID	96.2	Sanitizer / Material Preservative

Metallic Copper						
Registration Number	**Marketing Class**	**Registrant**	**Product Name**	**Formulation Type**	**Guarantee (label) (%)**	**Product Type**
31173	COMMERCIAL	CANADIAN COPPER & BRASS DEVELOPMENT ASSOCIATION (CCBDA)*	ANTIMICROBIAL COPPER ALLOYS GROUP II	SOLID	91.3	Sanitizer / Material Preservative
31174	COMMERCIAL	CANADIAN COPPER & BRASS DEVELOPMENT ASSOCIATION (CCBDA)*	ANTIMICROBIAL COPPER ALLOYS GROUP III	SOLID	82.6	Sanitizer / Material Preservative
31175	COMMERCIAL	CANADIAN COPPER & BRASS DEVELOPMENT ASSOCIATION (CCBDA)*	ANTIMICROBIAL COPPER ALLOYS GROUP IV	SOLID	73.0	Sanitizer / Material Preservative
31176	COMMERCIAL	CANADIAN COPPER & BRASS DEVELOPMENT ASSOCIATION (CCBDA)*	ANTIMICROBIAL COPPER ALLOYS GROUP V	SOLID	66.5	Sanitizer / Material Preservative
31177	COMMERCIAL	CANADIAN COPPER & BRASS DEVELOPMENT ASSOCIATION (CCBDA)*	ANTIMICROBIAL COPPER ALLOYS GROUP VI	SOLID	62.0	Sanitizer / Material Preservative
31963	COMMERCIAL	GLOBAL BRASS AND COPPER INC.	CUVERRO I	SOLID	66.5	Sanitizer / Material Preservative
31967	COMMERCIAL	GLOBAL BRASS AND COPPER INC.	CUVERRO III	SOLID	82.6	Sanitizer / Material Preservative
31974	COMMERCIAL	GLOBAL BRASS AND COPPER INC.	CUVERRO V	SOLID	91.3	Sanitizer / Material Preservative
31976	COMMERCIAL	GLOBAL BRASS AND COPPER INC.	CUVERRO VI	SOLID	62.0	Sanitizer / Material Preservative

Copper present as mixed copper ethanolamine complexes						
Registration Number	**Marketing Class**	**Registrant**	**Product Name**	**Formulation Type**	**Guarantee (%)**	**Product Type**
27129	TECHNICAL ACTIVE	VIANCE LLC*	ACQ C2 TECHNICAL	SOLUTION	9	Not applicable
30771	TECHNICAL ACTIVE	TIMBER SPECIALTIES CO*	NW 100-Technical	SOLUTION	9	Not applicable
22083	COMMERCIAL	IBC MANUFACTURING COMPANY*	CURAP 20 WOOD PRESERVATIVE PASTE	PASTE	2	Remedial Wood Preservative
27026	COMMERCIAL	IBC MANUFACTURING COMPANY*	CURAP 20 PAK WOOD PRESERVATIVE WRAP	PASTE	1.60	Remedial Wood Preservative
27130	COMMERCIAL	VIANCE LLC*	ACQ 2102 WOOD PRESERVATIVE CONCENTRATE	SOLUTION	7.4	Heavy Duty Wood Preservative

Copper present as mixed copper ethanolamine complexes						
Registration Number	**Marketing Class**	**Registrant**	**Product Name**	**Formulation Type**	**Guarantee (%)**	**Product Type**
27131	COMMERCIAL	TIMBER SPECIALTIES CO*	NW 100 WOOD PRESERVATIVE CONCENTRATE	SOLUTION	7.4	Heavy Duty Wood Preservative
27132	COMMERCIAL	ARCH WOOD PROTECTION CANADA CORP*	WOLMAN NB	EMULSIFIABLE CONCENTRATE	9.25	Heavy Duty Wood Preservative
27621	COMMERCIAL	COPPER CARE WOOD PRESERVATIVES INC.*	CU-BOR REMEDIAL WOOD PRESERVATIVE	PASTE	2	Remedial Wood Preservative
28634	COMMERCIAL	TIMBER SPECIALTIES CO*	NW 100-C	SOLUTION	9	Heavy Duty Wood Preservative
28635	COMMERCIAL	VIANCE LLC*	ACQ-C2 EU	SOLUTION	9	Heavy Duty Wood Preservative
31020	COMMERCIAL	VIANCE LLC*	ACQ 1900 WOOD PRESERVATIVE CONCENTRATE	SOLUTION	7.4	Heavy Duty Wood Preservative
31160	COMMERCIAL	VIANCE LLC*	VIANCE CA-B	EMULSIFIABLE CONCENTRATE	9.25	Heavy Duty Wood Preservative

Proposed Re-evaluation Decision PRVD2016-14

Copper Pesticides Environmental Assessment of Wood Preservative, Material Preservative and Antifouling Uses

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Overview

What Is the Proposed Re-evaluation Decision?

After the final phase of re-evaluation of the copper pesticides, Health Canada's Pest Management Regulatory Agency (PMRA), under the authority of the *Pest Control Products Act* and Regulations, is proposing continued registration of products containing cuprous oxide, copper hydroxide, metallic copper and copper present as mixed copper ethanolamine complexes, for sale and use in Canada.

Health Canada's PMRA considered a phased approach for the re-evaluation of copper pesticides first registered before 1995. The first phase assessed risks to human health from all registered uses in Canada, and on the risks to the environment from agricultural, forestry, direct aquatic (including swimming pools) and industrial uses (Canada, 2009; Canada, 2010). At the time, it was noted that risks to the environment from the antimicrobial uses (wood preservative, material preservative, and antifouling uses) were to be assessed separately. The following copper-containing active ingredients, which are registered for wood preservative, material preservative, and/or antifouling uses, are included in the current review: cuprous oxide, copper hydroxide, metallic copper and copper present as mixed copper ethanolamine complexes. This second and final phase of the re-evaluation assesses risks to the environment from these antimicrobial uses.

Products containing copper-based active ingredients that are registered for wood preservative, material preservative or antifouling uses, do not present unacceptable risks to the environment when used according to the revised label directions. No additional data are being requested at this time. This proposal affects all end-use products containing cuprous oxide, copper hydroxide, metallic copper and copper present as mixed copper ethanolamine complexes registered in Canada.

This Proposed Re-evaluation Decision is a consultation document[1] that summarizes the science evaluation for copper-containing pesticides and presents the reasons for the proposed re-evaluation decision.

The information is presented in two parts. The Overview describes the regulatory process and key points of the evaluation, while the Science Evaluation provides detailed technical information on the environmental assessment of the copper-based active ingredients registered for wood preservative, material preservative and antifouling uses.

The PMRA will accept written comments on this proposal up to 45 days from the date of publication of this document. Please forward all comments to Publications (please see contact information indicated on the cover page of this document).

[1] "Consultation statement" as required by subsection 28(2) of the *Pest Control Products Act.*

What Does Health Canada Consider When Making a Re-evaluation Decision?

The PMRA's pesticide re-evaluation program considers potential risks, as well as value, of pesticide products to ensure they meet modern standards established to protect human health and the environment. The copper-containing pesticides were re-evaluated under Re-evaluation Program 1 as per Regulatory Directive DIR2001-03, *Pest Management Regulatory Agency Re-evaluation Program*. This program relies as much as possible on foreign reviews, typically United States Environmental Protection Agency (USEPA) Reregistration Eligibility Decision (RED) documents. For products to be re-evaluated under Program 1, the foreign review must meet the following conditions:

- it covers the main science areas, such as human health and the environment, that are necessary for Canadian re-evaluation decisions;
- it addresses the active ingredient and the main formulation types registered in Canada; and
- it is relevant to registered Canadian uses.

In this decision, the PMRA takes into account the Canadian use pattern and issues (for example, the federal Toxic Substances Management Policy [TSMP]).

The USEPA re-evaluated copper-containing pesticides and published its conclusions in a 2006 RED and a 2009 Revised RED for coppers. At the time, an ecological assessment of antimicrobial uses was not included. In August 2010, the USEPA published an Addendum to the 2009 Revised RED, which included environmental assessments for antifouling, wood and material preservative uses of copper pesticides. Based on its assessment, the USEPA concluded that copper-containing pesticides were eligible for reregistration. The PMRA compared the American and Canadian use patterns and determined the USEPA assessments were an adequate basis for the proposed Canadian re-evaluation decision.

For more details on the information presented in this overview, please refer to the Science Evaluation of this consultation document.

What Are Copper-Containing Pesticides?

Copper-containing pesticides are formulated using various forms of copper, which ultimately dissociate into cupric ion complexes and compounds, including the cupric ion (Cu^{2+}), the active component. A complete description of the copper-containing active ingredients was previously described in the first phase of re-evaluation (Canada, 2009).

Environmental Considerations

What Happens When Copper Is Introduced Into the Environment?

Copper, from wood preservative, material preservative or antifouling uses, is unlikely to affect non-target organisms when used according to the revised label directions.

A complete evaluation of copper's environmental fate and toxicity is available in Proposed Re-evaluation Decision PRVD2009-04, *Copper Pesticides* (Canada, 2009).

The USEPA concluded that the reregistration of antimicrobial uses of copper-containing pesticides was acceptable. Environmental exposures and risks from wood preservative, material preservative, or antifouling uses are within the range of those identified from the agricultural scenarios previously assessed. No mitigation measures were required by the USEPA. These conclusions apply to the Canadian situation. To minimize the potential exposure to non-target organisms, standard environmental hazard and advisory label statements are proposed to be added to all product labels.

What Additional Scientific Information is Required?

No additional data are required.

Next Steps

Before making a final re-evaluation decision on cuprous oxide, copper hydroxide, metallic copper and copper present as mixed copper ethanolamine complexes, the PMRA will consider all comments received from the public in response to this consultation document. A science-based approach will be applied in making a final decision on the copper pesticides. The PMRA will then publish a Re-evaluation Decision[2] that will include the decision, the reasons for it, a summary of comments received on the proposed decision and the PMRA's response to these comments.

[2] "Decision statement" as required by subsection 28(5) of the *Pest Control Products Act*.

Science Evaluation

1.0 Introduction

The PMRA used assessments of coppers from the United States Environmental Protection (USEPA). The USEPA revised Reregistration Eligibility Decision (RED) documents for coppers, dated May 2009, and the Revised Addendum to the 2009 Revised RED, dated August 2010, as well as other information on the regulatory status of copper compounds in the United States can be found at www.regulations.gov (Docket Number EPA-HQ-OPP-2005-0558).

2.0 Use Description of Copper-Containing Pesticides

Cuprous oxide, copper hydroxide, metallic copper and copper present as mixed ethanolamine complexes are registered in Canada as wood preservatives (heavy-duty and remedial), material preservatives (shingles and non-food contact touch surfaces) and/or antifouling coatings (for example, boat/ship hulls/bottoms and aquaculture equipment). The products are registered as Commercial or Domestic class.

The American and Canadian use patterns were compared. End-use products in the United States have similar formulation types, guarantees, use sites and application methods as those in Canada. In addition, application rates in the United States are either similar or higher than those in Canada. Based on this comparison of use patterns, it was concluded that the USEPA assessment for coppers is an adequate basis for the re-evaluation of copper-containing pesticides in Canada.

All current uses are being supported by the registrants and were, therefore, considered in the re-evaluation. Appendix I lists all cuprous oxide, copper hydroxide, metallic copper and copper present as mixed ethanolamine complexes products that are registered for wood preservative, material preservative and/or antifouling uses, as of 20 October 2015 under the authority of the *Pest Control Products Act*.

3.0 The Technical Grade Active Ingredients and their Properties

Based on a review of the available chemistry information, impurities of human health or environmental concern as identified in the *Canada Gazette*, Part II, Vol. 142, No. 13, SI/2008-67 (2008-06-25), including TSMP Track 1 substances, are not expected to be present in the technical products. The identity and properties of the technical grade active ingredients are presented below.

3.1 Identity of the Technical Grade Active Ingredients

Chemical Name	Common Name	CAS #	Molecular Formula	Molecular Weight	Percent Copper in Products
Copper(I) oxide (IUPAC)	Cuprous oxide	1317-39-1	Cu_2O	143.1	87– 88.44
Copper(II) hydroxide (IUPAC)	Copper hydroxide	20427-59-2	$Cu(OH)_2$	97.6	32.5 – 61
Copper (IUPAC)	Metallic copper	7440-50-8	Cu	63.6	99.1 - 99.9

Chemical Name	Common Name	CAS #	Molecular Formula	Molecular Weight	Percent Copper in Products
Bis[2-(amino-.kappa.N)ethanolato-.kappa.O]copper (IUPAC)	Mixed copper ethanolamine complexes or copper(II) 2-aminoethanolate	14215-52-2	$Cu(C_2H_6NO)$	183.7	9.0

3.2 Physical and Chemical Properties of the Technical Grade Active Ingredients

Common Name	Vapour Pressure	Ultraviolet (UV)/Visible Spectrum	Solubility in Water	*n*-Octanol–Water Partition Coefficient	Dissociation Constant
Cuprous oxide	Negligible; ionic solid	Not applicable; not susceptible to photochemical degradation	Sparingly soluble	Not applicable; metal oxide	Not applicable; practically insoluble in water
Copper hydroxide	Negligible; ionic solid	Not applicable; not susceptible to photochemical degradation	0.5 mg/L (sparingly soluble)	Not applicable; metal oxide	Not applicable; practically insoluble in water
Metallic copper	Negligible; ionic solid	Not applicable; not susceptible to photochemical degradation	1 mg/L (sparingly soluble)	Not applicable	Not applicable
Mixed copper ethanolamine complexes or copper(II) 2-aminoethanolate	1.9 kPa at 20°C for the aqueous solution	Absorbs in UV/visible spectrum	Total dissolution	Not applicable; aqueous solution	Equilibrium of soluble complexes with pKa values of ~8 and ~10

4.0 Human Health

The human health evaluation of copper pesticides was previously considered in the first phase of the re-evaluation (Canada, 2009).

5.0 Environment

5.1 Environmental Fate

Copper is an element that occurs naturally in the environment and does not break down any further via hydrolysis, metabolism or any other degradation processes. The free cupric ion has a high sorption affinity for soil, sediments and organic matter, and copper applied to the soil surface is not expected to move readily into groundwater. The copper ion is highly reactive, especially in aquatic environments. The form in which copper is found depends on water chemistry, such as the pH or organic content. Bioaccumulation of copper from the environment occurs if the copper is biologically available; however, many organisms are capable of regulating their body copper concentration. For more details, please refer to Proposed Re-evaluation Decision PRVD2009-04, *Copper Pesticides* (Canada, 2009).

5.2 Environmental Exposure and Risk Assessment

Based on the Canadian uses of copper as a wood preservative, material preservative and/or antifouling paint/coating, exposure and risk to terrestrial organisms is expected to be limited.

Aquatic organisms may be exposed if copper is released from treated materials and enters surface water either directly or through runoff. The toxicity of copper to aquatic organisms depends on the amount of bioavailable cupric ion in the water and is largely a function of water chemistry. The main cause of copper toxicity to aquatic organisms is through rapid binding to the gill membranes, which causes damage and interferes with osmoregulatory processes. Aquatic plants are more sensitive to copper than terrestrial plants. Given the limited environmental exposure data available (for example, leaching data), the USEPA conducted highly conservative ecological assessments for the most representative uses.

The wood preservative and material preservative uses were represented by preserved wood (decks and fencing) and industrial coatings (algae-resistant roofing shingles) in a housing community. Estimated environmental concentrations (EECs) and predicted LC_{50} values were generated using the Biotic Ligand Model (BLM) and water chemistry data from 811 United States Geological Survey (USGS) monitoring sites. The BLM, essentially a combined speciation and toxicity model, allows the calculation of toxicity values based on site-specific water chemistry. The most sensitive aquatic species were daphnids and salmonoids. This approach was also used to assess ecological risks from agricultural uses (Canada, 2009). Exposure estimates were based on the conservative assumptions that there were four houses per acre and that each of these homes had copper-treated shingles, or copper-treated wood decks and copper-treated wood fences. In the absence of leaching and other environmental fate data, it was assumed that 100% of copper leached from the treated structures would reach water bodies. Risk quotients (RQs) were calculated based on the predicted values and compared to the level of concern (LOC). For the roofing shingle uses, less than 1% of sites resulted in RQs higher than the LOC of 1. For wood preservative uses, 18% of sites resulted in RQs higher than the LOC of 1. However, given these conservative assumptions, it was determined that the scenarios did not reflect real-life conditions in which copper products are used. Consequently, the generated concentrations were considered to overestimate the potential levels of copper in the environment and the associated risk estimates. No mitigation measures were required by the USEPA.

The antifouling uses were represented by copper-based antifoulant paints applied to ships and other recreational water vehicles in a commercial marina. EECs were generated using the Marine Antifoulant Model to Predict Environmental Concentrations (MAM-PEC Model, version 2). The model predicts concentrations of copper in the water using physical and chemical characteristics of copper, including leaching rate. The most sensitive species were freshwater green algae and daphnia, and the marine mussel (Canada, 2009). Exposure estimates were based on the conservative assumptions that 100% of ships were treated with copper (total load of 245 kg/day), and that copper would leach at the highest possible rate (50 $\mu g/cm^2/day$). Based on the maximum predicted dissolved copper concentration in a commercial marina, RQs exceeded the LOC of 1 for freshwater species (RQs < 2) but not for marine species (< 1). It was concluded that based on the conservative assumptions, the MAM-PEC model may overestimate the potential levels of copper in the environment. Further, based on environmental fate characteristics of copper (free cupric ion is highly reactive in aquatic environments and binds tightly to sediment and organic

matter), risks to aquatic organisms from antifouling uses are not expected to be of concern. No mitigation measures were required by the USEPA.

Overall, the USEPA concluded that environmental exposures and risks from wood preservative, material preservative and/or antifouling uses are not of concern, and are within the range of those associated with agricultural uses. Based on the similarity of use patterns between Canada and the United States, the USEPA conclusions with respect to the environment are considered applicable to the uses of copper-containing pesticides in Canada. Based on the available acute toxicity data, an advisory label statement regarding copper's potential toxicity to non-target aquatic organisms is proposed on end-use product labels. To maintain consistency, it is also proposed to update end-use product labels based on PMRA's current environmental labelling standards (Appendix II).

6.0 Value

The value of copper pesticides was previously considered in the first phase of the re-evaluation (Canada, 2009).

7.0 Pest Control Product Policy Considerations

Pest Control Product Policy Considerations, such as the Toxic Substances Management Policy (TSMP) as well as formulants and contaminants of health or environmental concern, have previously been considered during the first phase of the copper pesticides re-evaluation (Canada, 2009). Copper does not meet all Track 1 criteria, and is not considered a Track 1 substance. Technical products of copper are not expected to contain any contaminants of health of environmental concern identified in the *Canada Gazette.*

8.0 Incident reports

Since 26 April 2007, registrants have been required by law to report incidents, including adverse effects to health and the environment, to the PMRA. Information on the reporting of incidents can be found on the Pesticides and Pest Management portion of Health Canada's website.

As of 5 November 2015, no incidents related to environmental exposure from antimicrobial uses of copper pesticides were submitted to the PMRA.

9.0 Organisation for Economic Co-operation and Development Status

Canada is part of the Organisation for Economic Co-operation and Development (OECD), which provides a forum in which governments can work together to share experience and seek solutions to common problems.

As part of the re-evaluation of an active ingredient, the PMRA takes into consideration recent developments and new information on the status of an active ingredient in other jurisdictions, including OECD member countries. In particular, decisions by an OECD member country to prohibit all uses of an active ingredient for health or environmental reasons are considered for relevance to the Canadian situation.

Copper oxide, copper hydroxide, metallic copper and/or copper present as mixed ethanolamine complexes are currently acceptable for use in other OECD member countries, including the United States and Australia. No decision by an OECD member country to prohibit all uses of one or more of these copper active ingredients for health or environmental reasons has been identified.

10.0 Proposed Re-evaluation Decision

The PMRA is proposing that products containing cuprous oxide, copper hydroxide, metallic copper and copper present as mixed copper ethanolamine complexes for sale and use as antifoulants, wood preservatives or material preservatives in Canada are acceptable for continued registration with the implementation of the proposed updated label statements. These statements are proposed to further protect the environment. The proposed label statements are presented in Appendix II. No additional data are being requested at this time.

11.0 Supporting Documentation

PMRA documents, such as Regulatory Directive DIR2001-03, *Pest Management Regulatory Agency Re-evaluation Program* and DACO tables (datacode tables) can be found on the Pesticides and Pest Management portion of Health Canada's website at healthcanada.gc.ca/pmra. PMRA documents are also available through the Pest Management Information Service. Phone: 1-800-267-6315 within Canada or 1-613-736-3799 outside Canada (long distance charges apply); fax: 613-736-3798; e-mail: pmra.infoserv@hc-sc.gc.ca.

The federal TSMP is available through the Environment Canada website.

The USEPA RED documents for the copper pesticides are available at www.regulations.gov (Docket Number EPA-HQ-OPP-2005-0558)

List of Abbreviations

BLM	Biotic-Ligand Model
CAS	Chemical Abstracts Service
Cu^{2+}	cupric ion
DACO	data code
EEC	estimated environmental concentration
IUPAC	International Union of Pure and Applied Chemistry
kg	kilogram(s)
K_{ow}	*n*-octanol–water partition coefficient
kPa	kilopascal
L	litre(s)
LC_{50}	lethal concentration to 50%
LOC	level of concern
mg	milligram(s)
OECD	Organisation for Economic Co-operation and Development
PCPA	*Pest Control Products Act*
pH	-log10 hydrogen ion concentration
PMRA	Pest Management Regulatory Agency
PRVD	Proposed Re-evaluation Decision
RED	Reregistration Eligibility Decision
RQ	risk quotient
RVD	Re-evaluation Decision
TGAI	technical grade active ingredient
TSMP	Toxic Substances Management Policy
USEPA	United States Environmental Protection Agency
UV	ultraviolet

Appendix I Registered Cuprous Oxide, Copper Hydroxide, Metallic Copper and Copper Present as Mixed Copper Ethanolamine Complexes Products with Antifouling, Wood Preservative and/or Material Preservative Uses, as of 20 October 2015

Cuprous Oxide						
Registration Number	**Marketing Class**	**Registrant**	**Product Name**	**Formulation Type**	**Guarantee Cu_2O (Elemental) (%)**	**Product Type**
21241	TECHNICAL ACTIVE	AMERICAN CHEMET CORPORATION*	TECHNICAL HIGH PERFORMANCE CHEM COPP	DUST OR POWDER	88	Not applicable
21242	TECHNICAL ACTIVE	AMERICAN CHEMET CORPORATION*	TECHNICAL LOLO TINT 97	DUST OR POWDER	88	Not applicable
21243	TECHNICAL ACTIVE	AMERICAN CHEMET CORPORATION*	TECHNICAL PURPLE COPP 97N	DUST OR POWDER	88	Not applicable
21244	TECHNICAL ACTIVE	AMERICAN CHEMET CORPORATION*	RED COPP 97N TECHNICAL	DUST OR POWDER	88	Not applicable
22088	TECHNICAL ACTIVE	NORDOX INDUSTRIES A S*	NORDOX CUPROUS OXIDE POWDER	DUST OR POWDER	97.0	Not applicable
22327	TECHNICAL ACTIVE	SCM METAL PRODUCTS, INC.*	SCM METAL PRODUCTS CUPROUS OXIDE	DUST OR POWDER	88.44	Not applicable
29178	TECHNICAL ACTIVE	AMERICAN CHEMET CORPORATION*	RED PREMIUM TECHNICAL	DUST OR POWDER	88	Not applicable
21351	DOMESTIC	INTERNATIONAL PAINT LLC.*	MICRON CSC (VARIOUS COLOURS)	SUSPENSION	36 (33)	Antifouling Coating
21352	DOMESTIC	INTERNATIONAL PAINT LLC.*	MICRON CSC (SHARK WHITE)	SUSPENSION	36 (33)	Antifouling Coating
21354	DOMESTIC	INTERNATIONAL PAINT LLC.*	BOTTOMKOTE XXX (VARIOUS COLOURS)	SUSPENSION	28.15 (25)	Antifouling Coating
21355	DOMESTIC	INTERNATIONAL PAINT LLC.*	BOTTOMKOTE (VARIOUS COLOURS)	SUSPENSION	44.14 (39.2)	Antifouling Coating
22022	DOMESTIC	INTERNATIONAL PAINT LLC.*	VC-OFFSHORE (BLUE, RED, BLACK)	SUSPENSION	41.66 (37.15)	Antifouling Coating
22718	DOMESTIC	INTERNATIONAL PAINT LLC.*	C-SHIELD (RED)	SOLUTION	10.13 (9)	Antifouling Coating
22727	DOMESTIC	INTERNATIONAL PAINT LLC.*	C-SWIFT (BLUE, RED, BLACK)	SUSPENSION	38%	Antifouling Coating
22728	DOMESTIC	INTERNATIONAL PAINT LLC.*	C-UNION JACK (RED)	SUSPENSION	(17.87)	Antifouling Coating
22820	DOMESTIC	INTERNATIONAL PAINT LLC.*	UNION JACK ANTIFOULING PAINT: RED NAU662	SUSPENSION	22%	Antifouling Coating
24389	DOMESTIC	INTERNATIONAL PAINT LLC.*	AQUARIUS (VARIOUS COLOURS)	SUSPENSION	49.73 (44.17)	Antifouling Coating
24392	DOMESTIC	INTERNATIONAL PAINT LLC.*	BOTTOMKOTE HS (VARIOUS COLOURS)	SOLUTION	42.67 (37.90)	Antifouling Coating
24393	DOMESTIC	INTERNATIONAL PAINT LLC.*	MICRON CSC EXTRA (VARIOUS COLOURS)	SUSPENSION	37.04 (32.09)	Antifouling Coating
24394	DOMESTIC	INTERNATIONAL PAINT LLC.*	ULTRA-KOTE EXTRA (RED, BLUE)	SOLUTION	72.18 (64.10)	Antifouling Coating
24395	DOMESTIC	INTERNATIONAL PAINT LLC.*	ULTRA-KOTE (RED, GREEN, BLUE, BLACK, BROWN)	SOLUTION	65.71 (58.36)	Antifouling Coating
26709	DOMESTIC	INTERNATIONAL PAINT LLC.*	BOTTOMKOTE ACT (VARIOUS COLOURS)	SOLUTION	41.97	Antifouling Coating
27574	DOMESTIC	INTERNATIONAL PAINT LLC.*	VINY-LUX (BLACK, GREEN, BLUE)	SUSPENSION	33.78 (30)	Antifouling Coating
27575	DOMESTIC	INTERNATIONAL PAINT LLC.*	VINY-LUX (RED)	SUSPENSION	42.79 (38)	Antifouling Coating

Cuprous Oxide						
Registration Number	**Marketing Class**	**Registrant**	**Product Name**	**Formulation Type**	**Guarantee Cu_2O (Elemental) (%)**	**Product Type**
21378	COMMERCIAL	INTERNATIONAL PAINT LLC.*	INTERSPEED BLA110 PREMIUM RED (ZA463003)	SUSPENSION	23.65 (21.0)	Antifouling Coating
21379	COMMERCIAL	INTERNATIONAL PAINT LLC.*	UNION JACK BCA350 COPPER RED (ZA469005)	SUSPENSION	17.86	Antifouling Coating
21397	COMMERCIAL	INTERNATIONAL PAINT LLC.*	INTERCLENE BRA542 BLACK (ZA467003) & BRA540 RED (ZA463007)	SOLUTION	38.28 (34)	Antifouling Coating
21652	COMMERCIAL	INTERNATIONAL PAINT LLC.*	EPOXYCOP	SUSPENSION	37.3	Antifouling Coating
21656	COMMERCIAL	HEMPEL (CANADA) INC.*	HEMPEL'S ANTIFOULING OLYMPIC 7660-5111 RED	SUSPENSION	45.31 (40.24)	Antifouling Coating
21657	COMMERCIAL	HEMPEL (CANADA) INC.*	HEMPEL'S ANTIFOULING OLYMPIC 7660-5030 LIGHT RED	SUSPENSION	45.31 (40.24)	Antifouling Coating
21658	COMMERCIAL	HEMPEL (CANADA) INC.*	HEMPEL'S ANTIFOULING OLYMPIC 7660-1999 BLACK	SUSPENSION	45.31 (40.24)	Antifouling Coating
21840	COMMERCIAL	INTERNATIONAL PAINT LLC.*	WEST MARINE BOTTOMSHIELD ANTIFOULING BOTTOM PAINT (VARIOUS COLOURS)	SOLUTION	42.56 (37.8)	Antifouling Coating
21841	COMMERCIAL	INTERNATIONAL PAINT LLC.*	TARR & WONSON COPPER PAINT RED 503-C	SOLUTION	25.67 (22.8)	Antifouling Coating
21986	COMMERCIAL	FLEXABAR CORP.*	FLEXGARD XI WATERBASE PRESERVATIVE	EMULSIFIABLE CONCENTRATE OR EMULSION	24.64	Antifouling Coating
22717	COMMERCIAL	INTERNATIONAL PAINT LLC.*	INTERSPEED 640 ANTIFOULING SERIES (OCEAN GREEN, RED, BLACK, BLUE)	SOLUTION	42.79 (38)	Antifouling Coating
23511	COMMERCIAL	SOCIETE LAURENTIDE INC	ATLANTIC ANTIFOULING PAINT COPPER BOTTOM RED	SUSPENSION	8.78	Antifouling Coating
23511.01	COMMERCIAL	SOCIETE LAURENTIDE INC	MATCHLESS SUPER MARINE	SUSPENSION	8.78	Antifouling Coating
23803	COMMERCIAL	FLEXABAR CORP.*	FLEXGARD VI WATERBASE PRESERVATIVE	EMULSIFIABLE CONCENTRATE OR EMULSION	14.26	Antifouling Coating
24097	COMMERCIAL	KOP-COAT INC.*	WEST MARINE CPP! PLUS ABLATIVE ANTIFOULING PAINT (BLUE, RED, BLACK, GREEN)	SUSPENSION	44.0	Antifouling Coating
24390	COMMERCIAL	INTERNATIONAL PAINT LLC.*	INTERCLENE 140 BWA 360 ANTIFOULING RED	SOLUTION	38.2 (33.93)	Antifouling Coating
24391	COMMERCIAL	INTERNATIONAL PAINT LLC.*	INTERSPEED 6200NA BQA654 ANTIFOULING RED	SOLUTION	21.73	Antifouling Coating
24409	COMMERCIAL	FLEXDEL CORP	AQUAGARD WATERBASE ANTIFOULING BOTTOM BOAT PAINT	SUSPENSION	23.6	Antifouling Coating
25788	COMMERCIAL	JOTUN PAINTS INC.	ANTIFOULING SEAFORCE 200 AV (VARIOUS COLORS)	SUSPENSION	45.53	Antifouling Coating
26589	COMMERCIAL	PPG ARCHITECTURAL FINISHES INCORPORATED*	AMERCOAT ABC #4 ANTIFOULING PAINT	SUSPENSION	27.1	Antifouling Coating
26907	COMMERCIAL	SASOL WAX GMBH*	NETREX AF MICRO CRYSTALLINE WAX	EMULSIFIABLE CONCENTRATE OR EMULSION	17	Antifouling Coating

Cuprous Oxide						
Registration Number	**Marketing Class**	**Registrant**	**Product Name**	**Formulation Type**	**Guarantee Cu_2O (Elemental) (%)**	**Product Type**
26991	COMMERCIAL	PPG ARCHITECTURAL FINISHES INCORPORATED*	AMERCOAT ABC #3 ANTIFOULING PAINT RED	SUSPENSION	42	Antifouling Coating
27098	COMMERCIAL	INTERNATIONAL PAINT LLC.*	INTERCLENE BRA 570 ANTIFOULING SERIES	SUSPENSION	37.2 (32.9)	Antifouling Coating
27277	COMMERCIAL	KOP-COAT INC.*	HORIZONS ABLATIVE ANTIFOULING BOTTOM PAINT	SUSPENSION	44.0	Antifouling Coating
27573	COMMERCIAL	INTERNATIONAL PAINT LLC.*	123 PAINT VINYL ANTIFOULING (ZA469033)	SUSPENSION	67.6 (60)	Antifouling Coating
28046	COMMERCIAL	IKO INDUSTRIES LTD*	AR GRANULES (ALGAE-RESISTANT ROOFING GRANULES)	GRANULAR	4.07	Material Preservative
31458	COMMERCIAL	FLEXDEL CORP	AQUAGARD WATERBASE ANTIFOULING RUBBER INFLATABLE BOAT PAINT	SUSPENSION	23.6	Antifouling Coating

Copper Hydroxide						
Registration Number	**Marketing Class**	**Registrant**	**Product Name**	**Formulation Type**	**Guarantee (Elemental) (%)**	**Product Type**
24670	TECHNICAL ACTIVE	NUFARM AGRICULTURE INC.*	CHAMPION TECHNICAL	SOLID	57.3	Not applicable
27503	TECHNICAL ACTIVE	E.I. DU PONT CANADA COMPANY*	KOCIDE COPPER HYDROXIDE TECHNICAL	SOLID	61	Not applicable
30390	TECHNICAL ACTIVE	ALBAUGH INC.*	COPPER HYDROXIDE MUP	SOLID	60.6	Not applicable
31374	TECHNICAL ACTIVE	NUFARM AGRICULTURE INC.*	CHAMPION WET CAKE TECHNICAL	SOLID	32.5	Not applicable
29255	MANUFACTURING CONCENTRATE	SEPRO CORPORATION*	SPIN OUT 260 MANUFACTURING CONCENTRATE	SUSPENSION	12.8	Not applicable
27214	DOMESTIC	GENICS INC.*	GENICS POSTGUARD	SOLID	1.71	Remedial Wood Preservative
25580	COMMERCIAL	GENICS INC.*	COBRA (TM) ROD	SOLID	1.8	Remedial Wood Preservative
27553	COMMERCIAL	GENICS INC.*	COBRA (TM) CRUSH MDT WOOD PRESERVATIVE	SOLUBLE POWDER	6.1	Wood Preservative
31806	COMMERCIAL	GENICS INC.*	COBRA WRAP GEL	PASTE	2	Remedial Wood Preservative

Metallic Copper						
Registration Number	**Marketing Class**	**Registrant**	**Product Name**	**Formulation Type**	**Guarantee (label) (%)**	**Product Type**
27903	TECHNICAL ACTIVE	ECKART GMBH	COPPER FLAKE TECHNICAL	DUST OR POWDER	99.1	Not applicable
31171	TECHNICAL ACTIVE	CANADIAN COPPER & BRASS DEVELOPMENT ASSOCIATION (CCBDA)*	COPPER TGAI	SOLID	99.98	Not applicable

Metallic Copper						
Registration Number	**Marketing Class**	**Registrant**	**Product Name**	**Formulation Type**	**Guarantee (label) (%)**	**Product Type**
31751	TECHNICAL ACTIVE	ARCH WOOD PROTECTION CANADA CORP*	COPPER TECHNICAL FLAKE	SOLID	99.9	Not applicable
21372	DOMESTIC	INTERNATIONAL PAINT LLC.*	FIBREGLASS BOTTOMKOTE RACING BRONZE	SOLUTION	28	Antifouling Coating
22020	DOMESTIC	INTERNATIONAL PAINT LLC.*	VC 17M	SUSPENSION	20.25	Antifouling Coating
31172	COMMERCIAL	CANADIAN COPPER & BRASS DEVELOPMENT ASSOCIATION (CCBDA)*	ANTIMICROBIAL COPPER ALLOYS GROUP I	SOLID	96.2	Sanitizer / Material Preservative
31173	COMMERCIAL	CANADIAN COPPER & BRASS DEVELOPMENT ASSOCIATION (CCBDA)*	ANTIMICROBIAL COPPER ALLOYS GROUP II	SOLID	91.3	Sanitizer / Material Preservative
31174	COMMERCIAL	CANADIAN COPPER & BRASS DEVELOPMENT ASSOCIATION (CCBDA)*	ANTIMICROBIAL COPPER ALLOYS GROUP III	SOLID	82.6	Sanitizer / Material Preservative
31175	COMMERCIAL	CANADIAN COPPER & BRASS DEVELOPMENT ASSOCIATION (CCBDA)*	ANTIMICROBIAL COPPER ALLOYS GROUP IV	SOLID	73.0	Sanitizer / Material Preservative
31176	COMMERCIAL	CANADIAN COPPER & BRASS DEVELOPMENT ASSOCIATION (CCBDA)*	ANTIMICROBIAL COPPER ALLOYS GROUP V	SOLID	66.5	Sanitizer / Material Preservative
31177	COMMERCIAL	CANADIAN COPPER & BRASS DEVELOPMENT ASSOCIATION (CCBDA)*	ANTIMICROBIAL COPPER ALLOYS GROUP VI	SOLID	62.0	Sanitizer / Material Preservative
31963	COMMERCIAL	GLOBAL BRASS AND COPPER INC.	CUVERRO I	SOLID	66.5	Sanitizer / Material Preservative
31967	COMMERCIAL	GLOBAL BRASS AND COPPER INC.	CUVERRO III	SOLID	82.6	Sanitizer / Material Preservative
31974	COMMERCIAL	GLOBAL BRASS AND COPPER INC.	CUVERRO V	SOLID	91.3	Sanitizer / Material Preservative
31976	COMMERCIAL	GLOBAL BRASS AND COPPER INC.	CUVERRO VI	SOLID	62.0	Sanitizer / Material Preservative

Copper present as mixed copper ethanolamine complexes						
Registration Number	**Marketing Class**	**Registrant**	**Product Name**	**Formulation Type**	**Guarantee (%)**	**Product Type**
27129	TECHNICAL ACTIVE	VIANCE LLC*	ACQ C2 TECHNICAL	SOLUTION	9	Not applicable
30771	TECHNICAL ACTIVE	TIMBER SPECIALTIES CO*	NW 100-Technical	SOLUTION	9	Not applicable
27130	COMMERCIAL	VIANCE LLC*	ACQ 2102 WOOD PRESERVATIVE CONCENTRATE	SOLUTION	7.4	Heavy Duty Wood Preservative
27131	COMMERCIAL	TIMBER SPECIALTIES CO*	NW 100 WOOD PRESERVATIVE CONCENTRATE	SOLUTION	7.4	Heavy Duty Wood Preservative
27132	COMMERCIAL	ARCH WOOD PROTECTION CANADA CORP*	WOLMAN NB	EMULSIFIABLE CONCENTRATE	9.25	Heavy Duty Wood Preservative
27621	COMMERCIAL	COPPER CARE WOOD PRESERVATIVES INC.*	CU-BOR REMEDIAL WOOD PRESERVATIVE	PASTE	2	Remedial Wood Preservative
28634	COMMERCIAL	TIMBER SPECIALTIES CO*	NW 100-C	SOLUTION	9	Heavy Duty Wood Preservative
28635	COMMERCIAL	VIANCE LLC*	ACQ-C2 EU	SOLUTION	9	Heavy Duty Wood

Copper present as mixed copper ethanolamine complexes						
Registration Number	**Marketing Class**	**Registrant**	**Product Name**	**Formulation Type**	**Guarantee (%)**	**Product Type**
						Preservative
31020	COMMERCIAL	VIANCE LLC*	ACQ 1900 WOOD PRESERVATIVE CONCENTRATE	SOLUTION	7.4	Heavy Duty Wood Preservative
31160	COMMERCIAL	VIANCE LLC*	VIANCE CA-B	EMULSIFIABLE CONCENTRATE	9.25	Heavy Duty Wood Preservative

Appendix II Label Amendments for Copper Products Containing Cuprous Oxide, Copper Hydroxide, Metallic Copper and Copper Present as Mixed Copper Ethanolamine Complexes

The label amendments presented below do not include all label requirements for individual end-use products, such as first aid statements, disposal statements, precautionary statements and supplementary protective equipment. Information on labels of currently registered products should not be removed unless it contradicts the above label statements.

A submission to request label revisions will be required within 90 days of finalization of the re-evaluation decision.

DOMESTIC END-USE PRODUCT LABELS

The labels of domestic class end-use products registered for use as antifoulants or remedial wood preservatives in Canada must be amended to include the following statements to further protect the environment.

A. For products registered for use as antifouling paints/coatings:

I) The following statement must be included in a section entitled **DIRECTIONS FOR USE**:

> It is recommended that you prevent paint chips or dust caused by removing paint from entering water. **DO NOT** place the painted parts in water after painting until the paint is fully cured (see recommended times on the label).

II) The following statement must be included in a section entitled **ENVIRONMENTAL HAZARDS**.

> Toxic to aquatic organisms.

B. For products registered for use as remedial wood preservatives:

I) The following statement must be included in a section entitled **DIRECTIONS FOR USE**:

> **DO NOT** apply this product to wood that will be used in water.

II) The following statement must be included in a section entitled **ENVIRONMENTAL HAZARDS**:

> Toxic to aquatic organisms.

COMMERCIAL END-USE PRODUCT LABELS

The labels of commercial class end-use products registered for use as antifoulants, wood preservatives or material preservatives in Canada must be amended to include the following statements to further protect workers and the environment.

A. For all products:

I) The following statements must be included in a section entitled **DIRECTIONS FOR USE**:

> **DO NOT** contaminate irrigation or drinking water supplies or aquatic habitats by cleaning of equipment or disposal of wastes.
>
> **DO NOT** apply this product directly to freshwater habitats (such as lakes, rivers, sloughs, ponds, prairie potholes, creeks, marshes, streams, reservoirs and wetlands), or estuarine/marine habitats.
>
> **DO NOT** discharge effluent containing this product or the biocide produced into sewer systems, lakes, streams, ponds, estuaries, oceans or other waters unless the effluent has been detoxified by suitable means.

II) The following statement must be included in a section entitled **ENVIRONMENTAL HAZARDS**:

> Toxic to aquatic organisms.

II) The following statement must be included in a section entitled **DISPOSAL**:

Canadian manufacturers should dispose of unwanted active ingredients and containers in accordance with municipal or provincial regulations. For additional details and clean up of spills, contact the manufacturer or the provincial regulatory agency.

B. For products registered for use as antifouling paints/coatings:

I) The following statement must be included in a section entitled **DIRECTIONS FOR USE**:

> It is recommended that you prevent paint chips or dust caused by removing paint from entering water. **DO NOT** place the painted parts in water after painting until the paint is fully cured (see recommended times on the label).

C. For products registered for use as heavy-duty wood preservatives:

I) The following statements must be included in a section entitled **DIRECTIONS FOR USE**:

> Store treated lumber on a roofed drip pad until dripping has ceased. Slope lumber on the drip pad to expedite drainage and to ensure that no puddles remain on the surface of the wood. Manage drippage and other related wastes to prevent release in the environment.
>
> Drip aprons must be roofed, paved and drained to prevent dilution and loss of treatment solution.
>
> **DO NOT** expose treated lumber to rains immediately after treatment.
>
> For further information on storage, handling, and disposal of treated wood, contact the manufacturer of this product or the provincial regulatory agency.

D. For products registered for use as remedial wood preservatives:

I) The following statement must be included in a section entitled **DIRECTIONS FOR USE**:

> **DO NOT** apply this product to wood that will be used in water.

References

A. Studies Considered in the Chemistry Assessment

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ADDITIONAL INFORMATION CONSIDERED

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Pest Management Regulatory Agency
Agence de réglementation de la lutte antiparasitaire

Special Review Decision SRD2002-01

Tributyltin Antifouling Paints for Ship Hulls

The purpose of this document is to notify registrants, pesticide regulatory officials, and other interested parties of the regulatory decision following the special review of tributyltin antifouling paint products for use on ship hulls—SRA2000-01, *Special Review of Organotin Antifouling Paints for Ship Hulls*. While "organotin anti-fouling systems" is the term used by the International Maritime Organization (IMO), this document will refer to tributyltin (TBT) antifouling paints, as these are the ones currently registered in Canada. The decisions and actions outlined in this Decision Document conclude the special review of TBT antifouling paints by the Pest Management Regulatory Agency (PMRA).

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In May 2000, the PMRA announced[1] that a Special Review would be initiated in response to evidence that TBT antifouling paints were causing harm to the marine environment. As part of this announcement, the PMRA indicated that the Marine Environmental Protection Committee (MEPC) of the IMO had adopted a resolution to develop a legally binding global Convention to address the harmful effects of antifouling paints. The resolution further indicated that organotin antifouling systems would be the first to be controlled by the Convention and would be targeted for phase-out by January 1, 2003. The Canadian and U.S.A. MEPC delegations collaborated on their contributions to the development of the final text of the IMO Convention[2].

In this Decision Document, the PMRA is announcing that, due to risks to the Canadian environment and to be consistent with the IMO Convention, the registrations of TBT antifouling paints will end October 31, 2002, which is the end of the 2002 use season. As an additional step to ensure an orderly phase-out of use, the sale and distribution of affected products will end September 1, 2002.

An assessment of the risk of TBT antifouling paints to the Canadian environment has been completed, as has an assessment of whether currently registered non tin alternative products will meet the needs of Canadian users. The following is a summary of the assessments, which serve as a basis for the decision.

Environmental Risk Assessment

A detailed review of the persistence, bioaccumulation, and toxicity of TBT in aquatic environments was conducted by Environment Canada[3].

TBT occurs in the Canadian environment exclusively as a result of human activity. The persistence of TBT in water is slight to moderate with half-lives of a few days to a few months. In sediments, it is significantly more persistent. Several studies from different parts of the world indicate half-lives for TBT in sediment of up to 15 years.

The octanol–water partition coefficient (K_{ow}) for TBT indicates a potential for bioaccumulation, as the log K_{ow} values range from 3.2 to 4.1. Studies with algae, aquatic invertebrates, and fish have confirmed that bioaccumulation of TBT in these organisms is substantial. The bioconcentration factor (BCF) values range up to 10 000 in periwinkles, 50 000 in fish, and 500 000 in clams. Although TBT does not appear to significantly biomagnify up the food chain

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1 Special Review Announcement SRA2000-01, *Special Review of Organotin Antifouling Paints for Ship Hulls*

2 International Convention on the Control of Harmful Antifouling Systems, October 2001. Reference: www.imo.org

3 Review of the Persistence, Bioaccumulation and Toxicity of Tributyltin in Aquatic Environments in Relation to Canada's Toxic Substances Management Policy, R. James Maguire, Water Qual. Res. J. Canada, 2000, Volume 35, No.4, 633-679

in some studies conducted to date, it is found in the tissues of marine mammals and other organisms in open ocean areas.

TBT is toxic to many aquatic organisms, including fish. Acute toxicity, to some fish, occurs at a few milligrams per litre, while chronic toxicity can be found at concentrations in the order of micrograms per litre. It is highly toxic to molluscs, with chronic toxicity in oysters and clams occurring at fractional micrograms per litre concentrations. Evidence of the disruption of the endocrine system, e.g., the induction of imposex (the imposition of male sexual characteristics on females) is seen at 0.5 ng Sn/L in dogwhelks. Some marine benthic invertebrates are also very sensitive to TBT in sediments. Populations of benthic invertebrates such as polychaetes and amphipods have been shown to be reduced as a result of exposure to TBT in sediments.

Because of concerns regarding the impact of TBT on the aquatic environment, Canada and many other countries limited application of TBT antifouling paints to vessels greater than 25 m in length and to vessels (of any length) with aluminum hulls, the latter because many non-tin alternatives contain forms of copper which can cause corrosion of aluminum hulls. A maximum daily tin release rate was imposed for these applications.

In Canada, these regulatory controls have been only partially effective in reducing concentrations of TBT in the aquatic environment. In some locations, TBT was found in fresh water much less frequently in 1994 than in 1982–1985, and at much lower concentrations than a decade earlier. In 1994, TBT was found in fresh water sediments at similar concentrations to those found a decade earlier, but was found more frequently.

In sea water, TBT was found more frequently in 1994 compared to samples taken between 1982 and 1985. In every case, the concentrations exceeded acute and chronic toxicity endpoints, indicating a high potential for adverse effects in the particular locations. In marine sediments, TBT was found more frequently in 1994 than a decade earlier, although at greatly reduced concentrations. In about half of all marine sediments in which TBT was found, its concentration exceeded chronic toxicity thresholds, indicating a high potential for adverse effects in the particular locations.

Using the effect of imposex on molluscs to monitor recovery from TBT contamination, it was found that whelks (various species) before 1989 had high frequencies of imposex in the Juan de Fuca Strait and the Strait of Georgia, and lower frequencies on the west coast of Vancouver Island. By 1994, a reduction in imposex was evident on the west coast of Vancouver Island and in some locations in the Strait of Georgia. However, there was no clear evidence of recovery near Victoria, and Vancouver Harbour did not have whelks in any abundance. Similarly, in Atlantic Canada, imposex in *Nucella lapillus* was found in 13 of 34 sites sampled in 1995. These results indicate that the regulatory control of TBT antifouling paints in Canada had not eliminated the problem by 1995. Because of the long persistence of TBT in sediment, TBT concentrations in marine sediments in some locations may exceed chronic toxicity thresholds for years to come.

In consideration of the foregoing, the PMRA has determined that the use of TBT in antifouling paints poses an unacceptable risk to Canadian waters, based on non-target toxicity to aquatic organisms, persistence in the environment, and bioaccumulation in aquatic organisms.

In addition, the PMRA has considered TBT in antifouling paints relative to the federal Toxic Substances Management Policy and has determined that TBT would be considered persistent in sediment because its half-life in sediment is >365 days, bioaccumulative because its bioconcentration factor is greater than 5000 in several marine species, and *Canadian Environmental Protection Act*-toxic equivalent because of its toxicity to a number of marine organisms at concentrations found in Canadian aquatic environments.

Value Assessment

The PMRA has assessed the impact of phasing out TBT antifouling paints in Canada and the availability of alternative products to Canadian users.

Organotin antifouling paints are registered for a range of antifouling needs including deep sea-going ships and smaller ships which travel primarily in coastal waters (e.g., ferries, sailboats with aluminum hulls). In the past three years, the use of TBT paints has declined so that the primary use is now limited to a single product used on the west coast and only for application on smaller ships with aluminum hulls. The current registrations include three paint products (two of which have not been used in the last year), the associated three concentrates, and the active ingredient tri-*N*-butyltin methacrylate. The only TBT antifouling paint that is in current use is labelled for use on ships with aluminum hulls. Based on information obtained from International Paint Co., Canadian paint applicators are no longer applying TBT paints to vessels that travel in deep sea water. It has been confirmed that past users of TBT paints, such as the Department of National Defence, are no longer applying tin products on their ships, which would indicate that adequate alternative paints are available.

Since 1989, several non-TBT antifouling paints have been evaluated and registered for use in Canada. These non-tin products contain copper active ingredients[4] that offer antifouling properties similar to those of the TBT antifouling paints. Presently there are more than 50 copper-based antifouling paints registered for use by either small ship owners or professional paint applicators. These copper antifouling paints offer protection periods ranging from 12 months to 36 months or longer. There are two copper thiocyanate products that are suitable for application on ships with aluminum hulls, since they do not cause corrosion like other copper-containing paints; therefore it has been determined that Canadian registered non-tin products provide a period of control that meets the needs of shipowners.

[4] One of: cuprous oxide, metallic copper, or copper thiocyanate

Regulatory Decision

The decision and actions outlined in this section are the conclusion of the Special Review of TBT antifouling paints by the PMRA. The PMRA has determined that the use of TBT antifouling paints represents an unacceptable risk to the marine environment. Alternative products currently registered in Canada offer an adequate period of control of fouling organisms to meet the needs of Canadian users.

As a result, the registrations of all 3 tri-*N*-butyl tin based TBT antifouling paints, and their associated registered concentrates and active ingredient, will be phased out during 2002, consistent with the IMO Convention phase-out date of January 1, 2003.

As a step to ensure the orderly phase-out of sale and distribution of affected products, the last date of all sales is September 1, 2002. Registrations will end October 31, 2002 (the end of the 2002 use season), after which date the use of these paint products will not be acceptable. After October 31, 2002, owners of unused paint will be encouraged to contact either the distributor or the manufacturer to make arrangements for product recall, or to contact their local provincial authority for proper disposal of unused product. The registrant has agreed to conduct a recall of any unsold product to ensure that there is no product in the channels of trade after January 1, 2003.

List of Affected Products

Technical Grade Active Ingredients

Tri-*N*-butyltin methacrylate	Registration No. 23282, Elf Atochem of Canada Ltd.

Manufacturing Concentrates (all containing Tri-*N*-butyltin methacrylate)

Biomet 303/60 Antifouling Agent	Registration No. 23483, Elf Atochem of Canada Ltd.
Biomet 304/60 Antifouling Agent	Registration No. 23484, Elf Atochem of Canada Ltd.
Biomet 300/60 Antifouling Agent	Registration No. 26164, Elf Atochem of Canada Ltd.

End-use Products

Intersmooth Hisol BFA253 SPC	Registration No. 21316, International Paint Co.
Interswift BKA007	Registration No. 21368, International Paint Co.
Tri-Lux IIT Copolymer Antifouling Paint	Registration No. 23281, International Paint Co.