Government of Canada | Gouvernement du Canada

PROPOSED RISK MANAGEMENT APPROACH

for

Non-Pesticidal Organotin Compounds

(Organotins)
(Non-Pesticidal Organotins)

Environment Canada
Health Canada
August 8, 2009

Canada

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1. ISSUE

1.1 Background

Organotin substances are tin compounds having 1, 2, 3 or 4 organic groups attached and are designated as mono-, di-, tri- or tetra-organotin depending on the number of tin-carbon bonds in the molecule. The non-pesticidal use of organotins is mostly in the vinyl industry.

Non-pesticidal organotins were initially assessed under the Priority Substances List program in 1993, and these substances were concluded not to be toxic to the environment under the *Canadian Environmental Protection Act* (the Act of 1988), which is now repealed and replaced by the *Canadian Environmental Protection Act, 1999* (CEPA 1999) (Canada 1999). At that time, there was insufficient information to conclude about any risk to human health.

Between August 1994 and March 2000, several notifications were received by the Minister of the Environment, which showed significant increases in use quantities and identification of a potential new route of release to the environment for nine organotin substances pursuant to subsection 26(2) of the Act of 1988 (or subsection 81(1) of CEPA 1999). These new and transitional substances were assessed by the New Substances Program and the assessment concluded these nine substances to be toxic to the environment (Environment Canada, 2006).

In 2003, Health Canada completed a follow-up report on organotins and concluded that non-pesticidal organotins do not present a danger to human life or health as defined in paragraph 64(*c*) of CEPA 1999 (Environment Canada, 2006).

1.2 Final Follow-up Ecological Risk Assessment Report Conclusions for Organotin Substances

A Notice summarizing the scientific considerations of a final follow-up ecological assessment report was published by Environment in the *Canada Gazette*, Part I, for Organotin Substances on August 8, 2009, under section 68 of CEPA 1999. The report presents Environment Canada's findings regarding whether the conclusions reached for the nine organotins notified as new and/or transitional substances also applied to the organotins on the DSL. The final follow-up ecological assessment report concluded that:

- mono- and dimethyltins, butyltins and octyltins do not meet the criteria set out in paragraphs 64(*a*) or (*b*) of CEPA 1999;
- tributyltins and tetrabutyltins meet the criterion set out in paragraph 64(*a*) of CEPA 1999;
- fluorotriphenyltin and tetraphenyltin do not meet the criteria set out in paragraphs 64(*a*) and (*b*) of CEPA 1999 because they are no longer being manufactured or imported in Canada. However, given their hazardous properties, they will be subject to the Significant New Activity provisions of CEPA 1999 to ensure that they are notified and will undergo ecological and human health assessments prior to being reintroduced into Canada.

The final follow-up ecological assessment report also concluded that tributyltins meet the criteria for persistence and meet the criteria for bioaccumulation as defined by the *Persistence and Bioaccumulation Regulations* made under CEPA 1999.

The presence of tributylins and tetrabutyltins in the environment results primarily from human activity.

For further information on the final follow-up ecological assessment report conclusion for organotin substances, refer to the final screening assessment report, available at: www.chemicalsubstanceschimiques.gc.ca

1.3 Proposed Measure

Following the assessment of a substance under section 68 of CEPA 1999, a substance may be found to meet the criteria under section 64 of CEPA 1999. In this case, the Minister of the Environment and the Minister of Health (the Ministers) can propose to take no further action with respect to the substance, add the substance to the Priority Substances List (PSL) for further assessment, or recommend the addition of the substance to the List of Toxic Substances in Schedule 1 of CEPA 1999. Under certain circumstances and for substances that fall within the regime set out in section 77 of the Act, the Ministers must make a specific proposal either to recommend addition to the List of Toxic Substances or to recommend the implementation of virtual elimination (or both). In this case, the Ministers proposed to recommend the addition of tributyltins and tetrabutyltins to the List of Toxic Substances in Schedule 1 of CEPA 1999. As a result, the Ministers will develop an instrument respecting preventive or control actions to protect the health of Canadians and the environment from the potential effects of exposure to these substances.

The final follow-up ecological risk assessment report concluded that tributyltins meet the criteria for virtual elimination set out in the Government of Canada's *Toxic Substances Management Policy* set out in subsection 77(4) of CEPA 1999 because:

- tributyltins meet the criteria under section 64 of CEPA 1999; and
- tributyltins meet the criteria for persistence and bioaccumulation as defined by the *Persistence and Bioaccumulation Regulations* made under CEPA 1999; and
- the presence of tributyltins in the environment results primarily from human activity; and
- tributyltins are not naturally occurring radionuclides or naturally occurring inorganic substances.

In the case of tributyltins, the Government of Canada intends to pursue virtual elimination as a management objective.

2. BACKGROUND

2.1 Substance Information

Organotin substances are generally represented by the formula R_xSnL_{4-x} (where x = 1–4). For these chemicals, "R" is a typical organic group, such as methyl, octyl, butyl or phenyl, which is covalently bonded to the tin atom by a carbon–tin bond. The other anionic moieties on tin, designated "L," may be halogens (chloride, fluoride, etc.) or other sulphur- or oxygen-based organic moieties, such as –SR', –OR', –OC(O)R', –S–, –O–, etc. Organotins are designated mono-, di-, tri- or tetrasubstituted depending upon the number of carbon–tin bonds in the

molecule. Tributytins are compounds containing a $Sn(C_4H_9)_3$ grouping and tetrabutyltins are compounds with the formula $Sn(C_4H_9)_4$.

3. WHY WE NEED ACTION

3.1 Characterization of Risk

3.1.1 Tributyltin Compounds

Tributyltin compounds meet both persistence and bioaccumulation criteria specified in the *Persistence and Bioaccumulation Regulations*, a regulation made under CEPA 1999 (Government of Canada, 2000).

There are special concerns with such highly persistent and bioaccumulative substances. Although current science is unable to completely predict the long-term ecological effects of these substances, they are generally acknowledged to have the potential to cause serious and possibly irreversible impacts. Assessments of such substances must therefore be performed using a preventative, proactive approach, to ensure that such harm does not occur.

Evidence that a substance is persistent and bioaccumulative may itself be a significant indication of its potential to cause environmental harm. Persistent substances remain in the environment for long periods of time, increasing the probability and the duration of exposure. Persistent substances that are subject to long-range transport are of particular concern because they can result in low-level, regional contamination. Releases of extremely small amounts of persistent and bioaccumulative substances may lead to relatively high concentrations in organisms over wide areas. Very bioaccumulative and persistent substances may also biomagnify through the food chain, resulting in especially high internal exposures for top predators. Because they are widespread, several different persistent and bioaccumulative substances may be present simultaneously in the tissues of organisms, increasing the likelihood and potential severity of harm.

Other factors can increase concerns regarding the potential for persistent and bioaccumulative substances to cause environmental harm. For example, there is a particular concern for substances that have the potential to harm organisms at relatively low concentrations and/or that have specific modes of toxic action (in addition to narcosis). Evidence that a substance does not occur in the environment naturally may also indicate an elevated potential to cause harm, since organisms will not have had very long to develop specific strategies for mitigating the effects of exposures. Evidence from monitoring studies indicating that a substance is widespread in the environment and/or that concentrations have been increasing over time is an indicator of elevated exposure potential. Evidence that a substance is used in Canada in moderate to large quantities (e.g., greater than 1000 kg/year) in a variety of locations and/or that use quantities are increasing may also be taken as an indicator of significant potential for exposure.

Based on the various lines of evidence presented in greater detail in the final follow-up ecological risk assessment report, it is concluded that tributyltin compounds have the potential to cause environmental harm.

3.1.2 Tetrabutyltins

Like most other organotins, tetrabutyltins are not believed to be persistent in the environment. Tetrabutyltins are expected to degrade by removal of one of the alkyl groups attached to the tin atom, producing tributyltins, which meets the criteria under section 64 of CEPA 1999 as well as the criteria for persistence and bioaccumulation. As a precursor to persistent and bioaccumulative compounds that have the potential to cause environmental harm, tetrabutyltins are considered to have the potential to cause harm.

Based on the lines of evidence presented in greater detail in the final follow-up ecological risk assessment report, it is concluded that tetrabutyltins have the potential to cause environmental harm.

4. CURRENT USES AND INDUSTRIAL SECTORS

Organotin substances are not manufactured in Canada but rather imported as raw chemicals or in formulations.

Approximately 70% of the total annual world production of non-pesticidal organotin compounds is used as PVC stabilizers (Lytle *et al*., 2003). Mono- and di-organotins are used mainly as PVC stabilizers. Some mono- and di-organotins are also used in depositing clear, durable tin oxide coatings on reusable glass bottles. Certain di-organotin compounds are used as catalysts in producing various polymers and esters. Internationally, di-organotins are also used as stabilizers for lubricating oils, hydrogen peroxide and polyolefins.

Tetra-organotin compounds are used primarily as intermediates in the synthesis of other organotin substances.

It is believed that almost all of the intentional use of tributyltins in Canada is related to its pesticidal properties, which are regulated under the *Pest Control Products Act* (PCPA). Action has already been taken on tributyltin pesticides with the greatest exposure to the environment. The use of tributyltins in antifouling paint for use on ship hulls has been prohibited in Canada since January 1, 2003, under the PCPA. As of March 1, 2009, two tributyltin pesticide active ingredients were registered under the PCPA and are found in six end-use products. The Pest Management Regulatory Agency of Health Canada intends to re-evaluate the remaining uses of tributyltin by 2009–2010, to determine if their use continues to be acceptable under today's standards for health and environmental protection.

It is recognized that tri-organotins occur as contaminants in other commercial organotin products. For example, Environment Canada (2006) reported that tributyltin can be an impurity at concentrations up to about 20% in tetrabutyltins imported for use in the synthesis of organotin stabilizers. Tributyltin is also present at lower concentrations (up to about 0.5%) in commercial dibutyltin products.

A compilation of information from industry and available literature has indicated that approximately 7 000 tonnes of non-pesticidal organotins were used in Canada in 2000. The primary use of non-pesticidal organotins is the formulation and use of PVC stabilizers. Tributyltins have been mostly used as pesticides and tetrabutyltins to produce other butyltins. Table 1 outlines the estimated use of non-pesticidal organotins in Canada. Table 2 is a pie chart

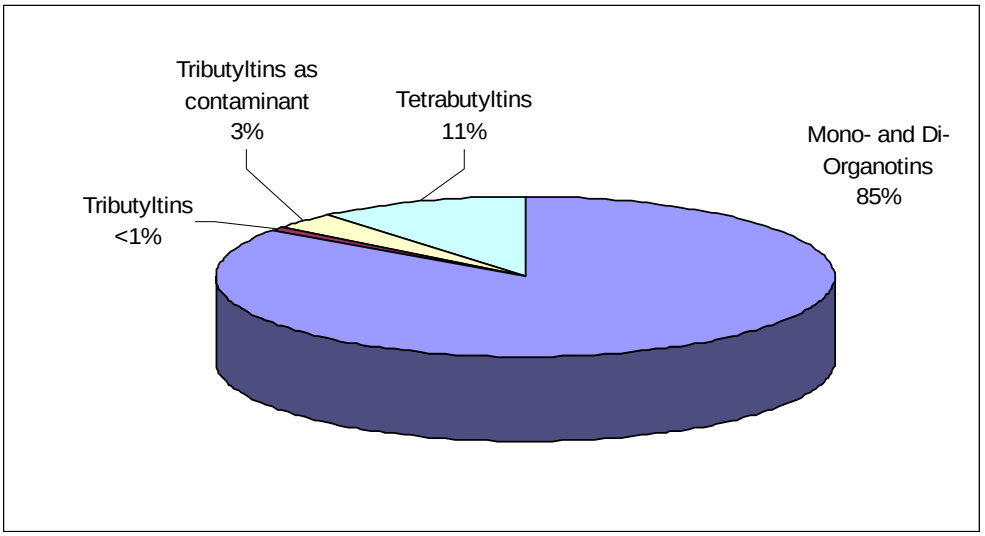
representing the percentage of non-pesticidal organotins found in Canada by type. 85% of all non pesticidal organotins found in Canada are either mono or di- organotins, less than 1% are tributyltins, 3% are tributyltins found as contaminants in other organotin products and the remaining 11% are tetrabutyltins.

Table 1: Estimated Use of Non-Pesticidal Organotins in Canada (2000)

Application	Use (tonnes)	% of Total Use	Substances
Synthesis of PVC stabilizers	1 000	14%	Tetrabutyltin
			Tributyltin[1]
Stabilizers in PVC processing	6 000	84%	Monobuyltin
			Dibutyltin
			Tributyltin[2]
			Monooctyltin
			Dioctyltin
Glass bottle coatings	36	<1%	Monobutyltin
			Dibutyltin
			Tributyltin[2]
Catalysts for polymer production	33	<1%	Monobutyltin
			Dibutyltin
			Tributyltin[2]
Use of tributyltins as a starting material	70	1%	Tributyltin
Total	**7 139**	**100%**	

[1] Present as an impurity in concentrations of less than 20%.
[2] Present as an impurity in concentrations of less than 0.5%.

Table 2: Percentage of Non-Pesticidal Organotins Found in Canada by Type



5. PRESENCE IN THE CANADIAN ENVIRONMENT AND EXPOSURE SOURCES

5.1 Releases to the Environment

Mono- and dibutyltin compounds are usually present in the environment as a result of the degradation of tributyltin, as well as from non-pesticidal industrial uses such as PVC stabilization. In the past, tributyltin compounds may have entered the environment mostly from their pesticidal uses. However, tributyltin compounds may also enter the environment because of their presence in other butyltin products and from the environmental breakdown of tetrabutyltins.

In Canada, the largest releases of organotins to the environment from non-pesticidal uses may occur as a result of formulation and blending processes, principally resulting from the release of liquid residues remaining in shipping containers, which could result in significant concentrations of organotins in local receiving waters and sediments. A survey of the handling practices of users of organotin stabilizers, conducted by the Vinyl Council of Canada and the Tin Stabilizers Association indicates that mainly totes (semi-bulk), tanker cars and drums are used to ship the substances, although the stabilizers can also be shipped in pails and kegs. Users either manually or automatically transfer the organotin stabilizers from shipping and storage containers to compound mixers. Transfer lines are cleaned on a monthly to infrequent basis, with rinsate being either recycled or directed to wastewater treatment facilities prior to being discharged to receiving waters.

Environment Canada estimates that in the absence of stewardship practices, up to 0.4 kg of organotin stabilizers per day could be released into the environment from a facility receiving stabilizers in drums, whereas up to 0.13 kg/day could be released from a facility receiving stabilizers by bulk or tote shipments. It was assumed that there would be no environmental releases from dry blend manufacture of powder coatings.

Facilities using organotin stabilizers have adopted product stewardship practices that have led to a decrease in the quantity of organotins that could potentially be released to the environment. The Vinyl Council of Canada and the Tin Stabilizers Association developed a guideline for the environmental management of stabilizers in Canada (Vinyl Council of Canada and the Tin Stabilizers Association, 2006). The guideline is applicable to companies that process PVC with a tin-based stabilizer. It is estimated that implementation of the practices in the guideline has substantially decreased the potential release of organotins to the environment. Environment Canada estimated that with stewardship practices in place, no more than 0.0016 kg of organotin stabilizers per day could be released into the environment from a facility. This level of exposure is considered negligible and, as a result, the mono- and di-organotin stabilizers were concluded to be not toxic.

The non-pesticidal tributyltin compounds meet the criteria for VE and are thus slated for virtual elimination in accordance with the Toxic Substances Management Policy (TSMP). They may be present in trace amounts in organotin stabilizers, and in higher amounts in tetrabutyltins as a degradation product. Tetrabutyltins are used to produce mono- and di-organotins and are not released to the environment in any significant amounts. However, since they may degrade to tributyltin, they are concluded toxic and require risk management, which will consist of a code of practice that identifies best management procedures and practices for their use, release and disposal, as well as prescribing monitoring activities.

5.2 Exposure Sources

Environmental releases of organotins are expected to occur mostly to water. Organotins with a moderate to high adsorption coefficient would tend to partition to bottom sediments and to suspended particulate matter in the water column. Generally, partitioning of organotins to air is expected to be negligible. Some organotin substances that have low water solubility and high vapour pressure would partition to air to a greater, but still limited, extent (Environment Canada, 2006).

In water, dissolution of many organotins yields the organotin cation, which is either hydrated or combined with the most prevalent anion (e.g., chloride ion in seawater). In general, the hydrolyzed organotins are not believed to be persistent in water. Tributyltins do not appear to be persistent in water.

Because organotins generally do not partition significantly to air, potential for long-range transport via air is expected to be limited.

Tributyltin degrades biologically and abiotically, yielding dibutyltin, monobutyltin and inorganic tin in water/sediment mixtures or water alone. Tetrabutyltins are expected to degrade in a similar manner, with tributyltin compounds being one of the first products of degradation.

6. OVERVIEW OF EXISTING ACTIONS

6.1 Existing Canadian Risk Management

6.1.1 Non-Pesticidal Organotin Compounds

Mono- and di-organotins

A guideline for the environmental management of tin stabilizers has been developed by the Vinyl Council of Canada (VCC) and the Tin Stabilizers Association (TSA) to prevent significant releases of organotin substances in the environment from their use as PVC stabilizers. Release scenarios based on the full implementation of the stewardship practices set out in the industry guideline indicate that releases would be limited to levels that would not cause harm.

In March 2008, an Environmental Performance Agreement (EPA) was signed between Environment Canada, the VCC, and the TSA to ensure compliance with the guideline. All 34 vinyl compounding facilities using tin stabilizers in Canada have signed the agreement. All commitment forms were received by August 2008. Detailed reporting requirements and verification provisions in the EPA will enable the Department to continue to monitor progress and assess the effectiveness of the agreement.

Tributyltins

There are no known risk management measures for non-pesticidal applications of tributyltins in place in Canada.

Tetrabutyltins

On March 26, 2005, a Ministerial Condition was published in Part I of the *Canada Gazette*. Made under paragraph 84(1)(*a*) of the Act, the Ministerial Condition states that the Notifier may import tetrabutyltins in any amount after the assessment period expires only in circumstances where the notifier complies with certain terms. Accordingly, the importation of the substance is limited for use as a component of stabilizers for rigid poly(vinyl chloride). Furthermore, the Ministerial Condition prohibits the release of the substance into the environment and states requirements for waste treatment containing the substance. Moreover, disposal restrictions are specified for returnable and non-returnable vessels. Finally, the Ministerial Condition specifies record-keeping and information requirements for the Notifier. The conditions do not apply to the substance if it is imported as a component of dry blended vinyl compounds.

Tetrabutyltins were notified as a transitional substance, as well as a new substance by different notifiers. The Ministerial Condition applies to tetrabutyltins notified as a new substance but does not apply to transitional notifications (those notifications reported after compilation of the DSL (from January 1, 1984, to December 31, 1986) but prior to implementation of the New Substances Notification regulations (July 1, 1994)).

6.1.2 Pesticidal Organotin Compounds

Tributyltins

Pesticidal organotin compounds fall under the jurisdiction of Health Canada's Pest Management Regulatory Agency (PMRA).

All pesticides undergo a pre-market scientific risk assessment to determine if it meets current health and environmental standards before it may be sold or used in Canada. Furthermore, PMRA re-evaluates registered pesticide every 15 years using the latest scientific methods and information to determine if it continues to meet Health Canada's health and environmental standards. As of March 2009, two tributyltin pesticide active ingredients were registered with PMRA, found in six end-use products. PMRA will re-evaluate the remaining uses of tributyltin by 2009–2010.

The importation, use and sale of biocidal antifouling paints in Canada are also subject to registration under the *Pest Control Products Act,* which is administered by the PMRA. The PMRA published in 2002 its Special Review Decision (SRD) on Tributyltin Antifouling Paints for Ship Hulls, indicating that all registrations/use of organotin paints would cease effective December 31, 2002 (Pest Management Regulatory Agency, 2000).

6.2 Existing International Risk Management

The International Maritime Organization's (IMO) International Convention on the Control of Harmful Anti-fouling Systems on Ships was adopted in October 2001 and came into force in September 2008. The Convention stipulates that effective January 1, 2003, ships shall not apply or re-apply organotin compounds that act as biocides in antifouling systems. The Convention also stipulates that effective January 1, 2008, ships shall either not bear such compounds on their hulls or external parts or surfaces, or shall bear a coating that forms a barrier to such compounds leaching from underlying non-compliant antifouling systems (International Maritime Organization, 2001). Canada is a Party to this Convention.

7. CONSIDERATIONS

7.1 Alternative Chemicals or Substitutes

7.1.1 PVC Stabilizers

Substitutes for PVC tin stabilizers include lead or mixed metals such as calcium and zinc. Characteristics of lead stabilizers include low costs and well-documented environmental concerns. Lead stabilizers are currently being phased out in Europe. It is expected that by 2010, lead will be replaced by lighter metals like calcium or zinc, as well as organic stabilizers. Mixed metal stabilizers are more expensive than their tin-based counterparts and are less effective in stabilization.

7.1.2 Use of Tributyltins as a Starting Material

Tributyltins are known to be used in the manufacture of other chemicals, one of which is a material preservative. Although no alternatives as a starting material are known to exist for this application, other non-tributyltin material preservatives registered under the *Pest Control Products Act* may be available.

7.1.3 Catalysts and Glass Coatings

Substitutes for organotin catalysts are limited to the area of urethane/E-coat catalysts. These include bismuth and beryllium based catalysts. However, due to their cost/performance profile, these substitutes have not achieved significant penetration into the marketplace.

There are no known alternatives to organotins in glass coatings.

7.2 Alternative Technologies and/or Techniques

No information is available on alternative technologies and/or techniques.

7.3 Socio-Economic Consideration

Socio-economic factors have been considered in the selection process for a regulation and/or instrument respecting preventive or control actions, and in the development of the risk management objective(s). Socio-economic factors will also be considered in the development of regulations, instrument(s) and/or tool(s) as identified in the *Cabinet Directive on Streamlining Regulation* (Treasury Board of Canada Secretariat 2007) and the guidance provided in the Treasury Board document *Assessing, Selecting, and Implementing Instruments for Government Action*.

8. PROPOSED OBJECTIVES

8.1 Environmental Objective

An environmental objective is a quantitative or qualitative statement of what should be achieved to address environmental concerns identified during a risk assessment.

8.1.1 Tributyltins

The ultimate environmental objective for tributyltin is virtual elimination (VE) as specified in the Government of Canada's *Toxic Substances Management Policy*. CEPA 1999 requires that substances targeted for VE be added to the Virtual Elimination List along with their determined Limit of Quantification (LoQ). The LoQ is the lowest concentration that can be accurately measured using sensitive but routine sampling and analytical methods.

Under CEPA 1999, virtual elimination means, in respect of a toxic substance released into the environment as a result of human activity, the ultimate reduction of the quantity or concentration of the substance in the release below the LoQ specified in the Virtual Elimination List.

8.1.2 Tetrabutyltins

The proposed environmental objective for tetrabutyltins is to minimize its release to the aquatic environment.

8.2 Risk Management Objectives

A risk management objective is a target expected to be achieved for a given substance by the implementation of risk management regulations, instrument(s) and/or tool(s).

The proposed risk management objective for tributyltins and tetrabutyltins is to achieve the lowest level of releases that are technically and economically feasible.

9. PROPOSED RISK MANAGEMENT

9.1 Proposed Risk Management Approach

As required by the Government of Canada's *Cabinet Directive on Streamlining Regulation*,[1] and criteria identified in the Treasury Board document entitled *Assessing, Selecting, and Implementing Instruments for Government Action*, the proposed risk management approach was selected using a consistent approach, and took into consideration the information that has been received through the follow-up risk assessment report and other information available at the time.

In order to achieve the risk management objective and to work towards achieving the environmental or human health objective(s), the risk management action being considered for tributyltins and tetrabutyltins are the following.

[1] Section 4.4 of the *Cabinet Directive on Streamlining Regulation* states that "Departments and agencies are to: identify the appropriate instrument or mix of instruments, including regulatory and non-regulatory measures, and justify their application before submitting a regulatory proposal".

9.1.1 Tributyltins

The selection of tools for these substances must take into account the primary route of environmental releases. The release of tributyltins to water during industrial use was identified as the appropriate point of implementation of risk management action for the substances. The management of tributyltins at the source will ensure that releases of the substances to the environment will be minimalized. The selection of tools must also take into account tributyltins present as contaminants in mono- and di-organotin stabilizers and tetrabutyltins for tin stabilizers synthesis.

The proposed risk management measures for tributyltin include the addition to the Virtual Elimination List, a prohibition regulation to be proposed under section 93 of CEPA 1999. Tributyltin benzoate will be added to the Domestic Substances List (DSL).

The final follow-up ecological risk assessment report concluded that tributyltins meet the criteria for virtual elimination set out in the Government of Canada's *Toxic Substances Management Policy* set out in subsection 77(4) of CEPA 1999 because:

- tributyltins meet the criteria under section 64 of CEPA 1999; and
- tributyltins meet the criteria for persistence and bioaccumulation as defined by the *Persistence and Bioaccumulation Regulations* made under CEPA 1999; and
- the presence of tributyltins in the environment results primarily from human activity; and
- tributyltins are not naturally occurring radionuclides or naturally occurring inorganic substances.

In the case of tributyltins, the Government of Canada intends to pursue virtual elimination as a management objective.

A prohibition regulation would be the most effective regulatory instrument for non-pesticidal uses of tributyltins. The prohibition regulation would prohibit use, import, sale and offer for sale of non-pesticidal uses of tributyltins, and prescribed within this regulation would be the permitted uses of products where tributyltins are present as contaminants. The following activities and uses would be added to Schedule 2, Part 2, of the prohibition regulations:

- production of tin stabilizers;
- production of glass coatings;
- catalysts for polymers;
- use of tin stabilizers.

In addition, all tributyltins managed under PMRA will be exempt from this regulation since pesticidal use of substances are managed under PMRA.

9.1.2 Tetrabutyltins

Although tetrabutyltins are not believed to be persistent in the environment, they are expected to degrade, producing tributyltins. As precursors to a persistent and bioaccumulative compound that

has the potential to cause environmental harm, tetrabutyltins are, in itself, considered to have the potential to cause harm.

The proposed risk management action for tetrabutyltins is a Code of Practice under paragraph 54(1)(*d*) of CEPA 1999. Also, the substance will be added to the DSL and the existing Ministerial Conditions will be rescinded.

A Code of Practice identifies best management procedures and practices, or environmental release relating to works, undertakings, and activities during any phase of their development and operation and any subsequent monitoring activities. It is anticipated that the implementation of the Code of Practice would minimize the release of tetrabutyltins to the environment. This will also contribute to the achievement of the Virtual Elimination objective for tributyltin.

As the Code of Practice would incorporate the Ministerial Conditions already in place, the Ministerial Conditions would be no longer necessary and therefore would be rescinded.

The addition of tetrabutyltins to the DSL will ensure that all notifiers of tetrabutyltin, whether as a new or transitional substance, will be subject to the same risk management actions.

9.2 Implementation Plan

A proposed risk management measure is intended to be published in the *Canada Gazette*, Part I, by summer 2011.

The development of a level of quantification for tributyltins will be considered, as will the addition of tributyltins to the Virtual Elimination List.

10. CONSULTATION APPROACH

Since the focus of this risk management approach is the management of releases from industrial sources, Environment Canada intends to consult with industrial users of the substances, other levels of government, and environmental non-government organizations (ENGOs).

A multi-stakeholder consultation will be initiated following the publication of the proposed Risk Management Approach. The consultations will cover the risk management process and the proposed instruments. Environment Canada will seek advice on the proposed risk management objectives and risk management instruments. The risk management approach for organotins is posted on www.ec.gc.ca/ceparegistry/participation. Validation of laboratory results relating to the development of a Limit of Quantification may be undertaken.

11. NEXT STEPS / PROPOSED TIMELINE

Actions	Date
Publication of final follow-up ecological assessment report	August 2009
Consult with stakeholders	Fall 2009
Initiate instrument development	Fall 2009

Publish proposed instrument in *Canada Gazette*, Part I	Summer 2011

Industry and other interested stakeholders are invited to submit comments on the content of this proposed risk management approach or provide other information that would inform Environment Canada's Risk Management Actions. Please submit comments prior to October 7, 2009, since the Government of Canada will be moving forward with the risk management of non-pesticidal organotins after this date. Pursuant to section 313 of CEPA 1999, any person who provides information to the Minister of the Environment under CEPA 1999 may submit with the information a request that it be treated as confidential. During the development of regulations, instrument(s) and/or tool(s), there will be opportunity for consultation. Comments and information submissions on the proposed risk management approach should be submitted to the address provided below:

Chemicals Production Division
351 St. Joseph Boulevard
Gatineau QC
K1A 0H3
Tel.: 819-997-5874
Fax: 819-994-5030
Email: CMP-CPD@ec.gc.ca

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