A GUIDELINE

for the

ENVIRONMENTAL MANAGEMENT

of

TIN STABILIZERS

In Canada

Developed in conjunction with Vinyl Council of Canada and the Tin Stabilizers Association

October 2006

1 This document consists of the original October 2006 version of the Guideline, with the exception of Appendix G, which was updated in August 2014.
Although the participants in the development of this Guideline believe that the information contained in this Manual is factual, it is not intended as a statement of legal requirements with respect to the handling of tin stabilizers. Consult with legal counsel, regulatory specialists, and/or appropriate government authorities to ensure compliance with local, regional, national and international laws and regulations. It is the user's responsibility to ensure proprietary rights and existing laws are observed. No warranty or representation, either expressed or implied, is made with respect to any or all of the content of this document, and the participants in its development do not assume any legal responsibility whatsoever.
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Preface

Tin stabilizers have been used in the processing of rigid vinyl (PVC and CPVC) products since the mid 1960’s. Tin stabilizers are the most effective type of heat stabilizers that are used in vinyl applications. Because of this and the continued growth of vinyl products in Canada, the overall volume of tin stabilizer used in vinyl processing has risen over the past years. In addition, the methods of handling tin stabilizers have also evolved into more efficient, automated and safer systems.

This Guideline has been developed to support all of these changes, and to ensure the continued safe, proper and efficient use of tin stabilizers.

Tin stabilizers are part of a diverse family of compounds called “organotins”. Tin stabilizers are made from mono and dialkyl tins, which are substantially different from trialkyltins (used as biocides) in toxicological behavior. Tin stabilizers themselves also differ from one another, being made up of methyl, butyl, and octyl tin types.

This Guideline addresses the in-plant handling methods for tin stabilizers and also the management of tin stabilizer packaging. The practices outlined in this Guideline are designed to ensure that tin stabilizers do not enter the aquatic environment during use or through the disposal of materials.

This Guideline is a voluntary stewardship initiative developed jointly under the Vinyl Council of Canada’s (VCC’s) Environmental Management Program (EMP), the Tin Stabilizers Association (TSA), industry users of tin stabilizers.

The elements of the Guideline are based on information obtained from the Survey of Handling Practices of Tin Stabilizers conducted in 2002 by VCC, TSA (Appendix A).

The overall goal of this Guideline is to prevent any release of tin stabilizer to the environment, because certain tin stabilizer products may cause harmful effects if allowed to enter the aquatic environment.

If you have any questions or require further information about the contents of this Guideline, please refer to the contact information in Appendix F.
Purpose

The goal of this guideline is to prevent the release of tin stabilizers to the environment by ensuring that these substances and their packaging materials are handled, stored, used and disposed of in a responsible manner.

Introduction

PVC, poly vinyl chloride and vinyl, are all names given to a widely used polymer/resin. PVC resin can be formulated into a broad spectrum of end product uses. CPVC is a more highly chlorinated variant of PVC, which also uses tin stabilizers.

Vinyl products fall generally into two categories – flexible and rigid.

Flexible vinyl products include floor and wall coverings, automotive interiors, swimming pool and other container liners such as for municipal landfills, as well as edge banding for furniture and skirting, jacketing for wiring and cables, toys, packaging and vinyl medical devices; such as, blood bags and tubing.

Rigid end uses, the majority of which are focused in the construction sector, include sewer pipe, water pipe, pipe fittings, window frames, doors, building systems, siding and eaves troughs.

Vinyl is a heat sensitive material. Therefore, it must be formulated to meet the end product specifications and to withstand the various processing stages to which the polymer is subjected. Typically, heat and shear are applied in these processing stages. Exposure of the vinyl to elevated temperatures for extended time can create degradation. If the vinyl is allowed to degrade during processing, then hydrochloric acid (HCl) may be released and this acts as a catalyst to further degrade the vinyl compound. Heat stabilizers are required in the vinyl formula to scavenge HCl and protect the vinyl from the heat of processing. Tin stabilizers are the most effective type of heat stabilizers in providing this protection.

The various process stages can include:

- Blending
- Pelletization
- Extrusion
- Injection moulding
- Calendering
- Blow moulding
- Thermoforming

(See Appendix E for Tin Stabilizer Handling Process Flow Chart and Potential Environmental Releases of Tin Stabilizer.)
As an example, a blister-packaging product can involve 4 of these processing stages. Each stage involves some form of heat and shear, hence the requirement for a heat stabilizer in the vinyl compound.

Pure PVC is manufactured as a resin in powder form. The other components in the formula can be liquids or powders. When the basic components are blended together, the mixture becomes the vinyl compound. Typically, the vinyl compound is in powder or pellet form, but may also be a liquid for some specific applications. The vinyl compound is then further processed into a vinyl product.

For making powder vinyl compounds, the two typical methods of blending are the low shear, low temperature Ribbon Blender or the high shear High Intensive Mixer which creates higher temperatures. The high shear system has a shorter blending time to obtain dispersion of the various components in the vinyl compound. Liquids are absorbed by the PVC resin, while the other additives (lubricants, fillers, colourants and other powder components) are mechanically dispersed in the resin. Automatic or manual dispensing operations involving the tin stabilizer occur during these compounding steps. During blending, the tin stabilizer becomes absorbed in the PVC resin, and becomes an integral part of the vinyl compound. Although the tin stabilizer is typically a liquid, it can sometimes be dispersed in a carrier to make a powder.

Tin stabilizers, whether liquids or solids, are high boiling point materials and therefore have low volatility. They are sensitive to light and moisture and need to be kept dry. In addition, while they can be in contact with stainless steel, they need to be kept out of contact with iron and iron oxide (rust).

Vinyl production has grown significantly in Canada. Tin stabilizers have played an important role in this growth due to their effectiveness. Currently, close to 40 facilities across Canada compound vinyl and use tin stabilizers. The facilities receive the tin stabilizers in various packaged forms. (See Appendix B) The high percentage of bulk and returnable packages is an indication of the industry’s efforts to minimize handling and environmental risk.
1.0  Applicability

This Guideline is applicable to all vinyl compounding facilities using tin stabilizers in Canada.

2.0  Glossary of Terms and Key Definitions

Absorbent: A powder or granular material, that has a high affinity to absorb and retain liquids.

Aquatic: Relating to the water environment.

Bulk Bag (Semi Bulk bag): A woven polypropylene bag that holds large quantities of solid materials, i.e. 1000kg.

Bulk Tank: An above ground tank where large quantities of liquid are stored i.e. 20,000kg.

Compound Mixer: A machine, which blends the components of a formula in a low or high shear manner.

Compounding: The mixing of various components to produce a material for subsequent processing into products.

Dike: A raised area around a tank (or other container) to contain and prevent the contents of the tank (or container) from leaving the area in the event that the tank or container leaks.

Drum: A container used to hold product, i.e. 220kg.

Designated Handler: Usually the supplier, or a company designated by the supplier, to handle the empty tin stabilizer packaging. For cases where designated handlers are not used the provisions of Section 8 should be followed.

Emissions: Gaseous, liquid or solid releases into the environment.

Environment: Ambient air, water or land.

Environmental Management Program (EMP): A stewardship initiative by the Vinyl Council of Canada to manufacture and market vinyl products in a safe and environmentally responsible manner. (Further information on the EMP may be found on the VCC’s web site at www.plastics.ca/vinyl).

Facility: A manufacturing plant where vinyl compounding is performed.
**Hose**: A flexible tube for carrying or transferring liquids.

**IBC**: Intermediate Bulk Container which is also called a liquid tote.

**Leak**: The unintentional release of any material into or out of a container or closed system.

**Municipal Waste**: Any waste, whether or not it is owned, controlled or managed by a municipality, except hazardous waste, liquid industrial waste or gaseous waste (and includes waste from residential, industrial, commercial and institutional sources).

**Municipal Waste Landfill**: A provincially certified landfill site restricted to the disposal of municipal waste.

**Rinsate**: The residue resulting from the cleaning of a container or piping system.

**Tin Stabilizer**: Specific tin compounds used in formulating vinyl materials.

**Tote (Semi Bulk container)**: A large moveable container, which can contain liquids, typically 1000kg. (Also called IBC)

**Transfer Line**: A connection from one vessel to another and which is typically a pipe or a hose.

### 3.0 Packaging

Tin stabilizers are commercially available in different packaged forms.

**Liquids** can be shipped to the facility by bulk trucks (20,000kg), which are typically dedicated, or in totes (1,000kg), drums (220kg) and small pails (20kg or less). Totes are typically reused or recycled. The drums and pails, which represent a very small part of the overall consumption in the Canadian industry, are typically one-way containers, and are disposed of by the end user of the tin stabilizer. (See Appendix B)

**Powders** may be in semi bulk bags (1,000kg) or small bags (20-25kg). The semi bulk bags can be returnable or one-way. The small bags are one-way.

The form of package determines the way in which the tin stabilizer is stored and introduced into the blending system.

### 4.0 Storage

Liquid tin stabilizers are sensitive to moisture and contamination by iron. Long-term exposure to light may also have a negative effect on some tin stabilizers. Store any package well away from sources of flame or heat. Review the tin stabilizer MSDS to check for the potential of incompatibility with other stored materials.
Accidental spills should be prevented. Drums and totes need to be protected during storage and use to prevent a container from being accidentally damaged by mechanical devices or vehicular traffic. Potential release of the tin stabilizer from improper drainage to the environment should be prevented, through the use of dikes, spill pallets, the closing of floor drains, etc.

4.1 Bulk

Construction materials for bulk storage tanks can be stainless steel, aluminum, high-density polyethylene (HDPE) or lined carbon steel. Care must be taken to ensure compatibility of the lining with the tin stabilizer. If in doubt, check with your tin stabilizer supplier.

Some bulk storage tanks are located indoors and are vented to the inside of the facility. Air monitoring in process plants has confirmed that, because of the low volatility of tin stabilizers, there is little or no emission to the ambient atmosphere in the facility. Some exposure to humidity exists, but with reasonable turnover of the inventory, there is no negative effect on tin stabilizer quality. In the case of extended storage with no use, care in sealing the vessel against humidity is advisable.

All bulk storage tanks should be placed inside a dike according to bulk storage guidelines. The latest draft guideline from the Ontario Ministry of the Environment is dated April 2005 and can be accessed via the Ontario Environmental Registry [http://www.ene.gov.on.ca/envision/env_reg/er/documents/2005/PA05E0012.pdf](http://www.ene.gov.on.ca/envision/env_reg/er/documents/2005/PA05E0012.pdf). This guideline advises that the capacity of the dike should be the greater of 110% of the largest tank or 100% of the largest tank plus 10% of the aggregate volume of all remaining tanks. Tin stabilizer users outside Ontario should check if their provincial environment departments have relevant guidelines, failing which the Ontario bulk storage guideline should be followed. The dike should be constructed and maintained to eliminate the possibility of unintentional discharge of tin stabilizer to the environment in the case of tank failure and kept clean to prevent contamination by any other material in the dike. The dike prevents material loss and allows recovery and reuse.

For bulk tanks venting to outdoors, check the requirements of appropriate provincial regulations in the event a permit or Certificate of Approval is required.

4.2 Totes

Typical materials of construction for totes are stainless steel, aluminum or high density polyethylene (HDPE). Ensure that the tote is well sealed before and after use to prevent contact with humidity. Store the tote(s) in a designated indoor
area and protect the tote(s) from damage by mechanical devices, vehicular traffic and heat or flame.

### 4.3 Drums and Pails

These are typically HDPE containers or steel containers, with an interior coating to protect the tin stabilizer from contamination with rust. Ensure that the container is sealed when not in use. Protect from weather, damage by mechanical devices, vehicular traffic and heat or flame.

### 5.0 Handling and Dispensing of Tin Stabilizers

Transfer lines to and from storage tanks, totes or drums should be made from stainless steel tubing/piping or special chemical transfer hoses. All hoses should be compatible with the tin stabilizer. Proper precautions should be exercised in drum to drum, tote to tote or bulk truck to tote etc. transfers to prevent spills. Adequate containment, such as provision of drip pans, is required to prevent residual product drips from valves and connections from entering the environment.

Transfers from bulk truck should be constantly attended and audible alarms should be used to ensure that action can be immediate should a transfer line be breached or a tank be filled to its capacity. Bulk unloading procedures should include a reference to required spill prevention and appropriate spill containment steps.

### 6.0 Rinsing Tanks, Totes, Drums or Lines

Rinsing of the tin stabilizer transfer lines is not typically required. **Water is not the recommended material for rinsing or purging the line as it is not compatible with vinyl processing.**

In the event that a transfer line requires purging before a change in the tin stabilizer is made, a tin stabilizer compatible liquid such as epoxidized soya bean oil (ESO) is recommended. Any ESO or vinyl compatible rinsate generated from transfer line rinsing, or ESO or vinyl compatible rinsate generated from rinsing a tote, drum or pail should be recycled back into a vinyl compound.

### 7.0 Reusable Packaging

Once the contents have been used, and before returning packaging to a designated handler, it is important to properly seal the empty package. Close valves, caps, lids etc. to prevent loss of residual product in the package to the environment. This also eliminates the possibility of foreign materials or objects entering the container, which could have an adverse effect on the reuse of the package.
In most cases, reusable totes are managed by a designated handler. Contact information is available on the container or from the stabilizer supplier.

Store all packaging correctly and when returned to the supplier or designate, ensure that the previous contents of the packaging, i.e. TIN STABILIZER, is shown on the Bill of Lading.

8.0 Spills

In the event of a spill of tin stabilizer, the first priority is to minimize the amount of the spill. Isolate or interrupt the flow by immediately closing a valve, rotating a drum or transferring the contents to minimize the spill. It is advisable to keep an empty tote or drum available for this transfer purpose.

For product that may be on the floor, PVC resin or industrial absorbent can be used to contain and absorb the spill. PVC powder is an ideal medium for soaking up small spills and can be incorporated into a vinyl compound for further processing.

If a spill of tin stabilizer has entered the environment, promptly follow the containment & reporting procedure referred to in Section 10.

The following spills will be tracked by the facility and will be noted in the Annual Compliance Form, Appendix G:

- spill is reportable under provincial regulations
- spill is off-site (any volume)
- spill is on-site (any volume) and has not been cleaned up (acceptable clean-ups have no adverse impact on the environment)

All operations are encouraged to track all spills, to document the cause of the spill, the actions taken and the steps taken to prevent a recurrence. Attention to the pattern of these will allow for improvement in manufacturing practices

9.0 Waste Disposal

Currently, most tin stabilizers are not regarded as hazardous substances and therefore not subject to the hazardous waste handling regulations of most provinces. However, concerns for tin stabilizer being released to the environment are very real.

As noted on Page iii, “The overall goal of this Guideline is to prevent any release of tin stabilizer to the environment, because certain tin products may cause harmful effects if allowed to enter the aquatic environment.”

To comply with this Guideline, waste containing tin stabilizer shall not be disposed of in a municipal waste landfill site. Facilities should dispose of any waste, containing tin
stabilizer, at a landfill or incinerator, that is certified to handle hazardous materials. There are three known sites in Canada set up for handling hazardous materials, which are:

Clean Harbours Canada Inc.
4090 Telfer Road, Rural Route #1
Corunna, ON N0N 1G0
Phone: 519 864 1021

Earth Tech (Canada) Inc.
Swan Hills Treatment Centre
Mail Bag 1500
Swan Hills, AB T0G 2C0
Phone: 780 333 1497

Clean Harbours Canada Inc.
Mercier Facility
1294 boule. Ste Marguerite
Ville Mercier, QC J6R 2L1
Phone: 450 691 9610

9.1 Material

Spilled material and liquid wastes must be collected and placed in a sealed container for later reuse or disposal. Where possible, non-aqueous rinsate, recovered solids or spilled materials should be reused in the manufacturing process. If reuse is not possible, these materials should be collected, properly packaged and disposed of at a suitable waste facility.

In the unlikely event that tanks, totes, drums or lines are cleaned with water at a compounding facility, the aqueous rinsate from this process must be collected and stored in suitable packaging, such as a used tote or drum, for later disposal.

Solid waste containing tin stabilizer, such as absorbent, should be collected and stored in a sealed container for later disposal.

Liquid wastes, including rinsates will require a manifest for lawful transfer and disposal in most Canadian jurisdictions. Such rinsate must be assigned the correct waste number (for example 252 L (Oily Water) in Ontario).

Under no circumstances should any water rinsate or other liquid rinsate be disposed of into municipal sewer systems, municipal storm water collection systems, other water treatment systems, receiving water or surface water courses.
9.2 Non-Reusable Packaging

Do not dispose of Non-Reusable Packaging in municipal waste landfill sites. Properly close the package once the contents have been used. Because the shipment of empty containers does not require special permits, only reputable packaging disposal and recycling companies should be used. These companies should be required to demonstrate that their rinsate is not released into the aquatic environment. (See Appendix C for guidelines relating to the selection of these companies.) When shipping these containers, make sure the bill of lading reflects the original contents of the package to ensure they are dealt with correctly.

Criteria for waste disposal may vary from province to province. Waste haulers, receivers of cleanup products after a spill, or companies accepting empty packaging and/or contaminated items, may require appropriate permits to handle these materials. It is the responsibility of the facility using tin stabilizer to ensure that the contracted waste management provider is operating under the necessary authority.

Depending on the nature of the waste product, the facility may also require a waste generator number. (See Appendix C for guidelines to be considered in selecting an appropriate disposal site.)

10.0 Management System

All facilities using tin stabilizers shall have a set of work instructions about these materials, with appropriate documentation. These work instructions will address the following:

- Receiving, storage and handling procedures for tin stabilizers
- Health & Safety and other relevant training
- Handling of empty packaging
- Waste material collection, storage and disposal procedures
- Spill containment and spill reporting procedures

11.0 Documentation

The following records shall be kept at the facility using the tin stabilizers for a minimum of two years, or as required by Provincial Regulations. This will facilitate annual reporting to the VCC that will demonstrate to stakeholders that the Guideline is being followed.

- A copy of the waste manifest, if applicable, showing the date, amount, waste class and receiver of any rinsate or liquid waste containing tin stabilizer.
- A copy of the paper work and Bill of Lading showing the date, number of pieces and the designated receiver of any solid waste containing tin stabilizer (i.e. absorbent materials, rags, contaminated clothing, etc).

- A copy of the paper work and Bill of Lading relating to the return of the returnable packaging (i.e. non-bulk) to a supplier showing the date, number of pieces and the designated receiver.

- A copy of the paper work and Bill of Lading relating to the shipment of waste packaging showing the type and number of pieces, the original product in the waste package and the designated receiver.

- Where applicable, documentation to verify that receivers of rinsate, waste materials, waste non-reusable packaging or returnable packaging, meet regulatory requirements and the intent of this Guideline.

- Documentation related to spill notification requirements for the release of tin stabilizer to the environment, identifying date, amount, cause and corrective action.

VCC will consolidate the annual reports and provide a consolidated conformance report to Environment Canada.
Appendix A – Background Data

2002 Handling Survey and Results

SURVEY OF HANDLING PRACTICES OF ORGANOTIN STABILIZERS

Please respond to all the questions in 1 - 5 which pertain to your operation and questions 6 – 9 as general procedure.

1. Please indicate the various forms of organotin stabilizers that you use.

   10☐ Bulk liquid…go to Question 2
   22☐ Semi bulk liquid…go to Question 3
       (i.e. 1000kg totes)
   1☐ Semi bulk powder…go to Question 5*
       (i.e. 500-1000kg bulk bags)
   6☐ Liquid drums…go to Question 4
       (i.e. 220kg metal or plastic drums)
   1☐ Other small packages…go to Question 5
       (i.e. pails/bags/kegs)

2. a) Is transfer line/hose from truck to bulk tank dedicated?

   10☐ Yes       0☐ No

b) Is tank diked or otherwise protected in case of leakage?

   8☐ Yes       2☐ No*

c) Is bulk storage hard piped directly to process?

   10☐ Yes       0☐ No

d) How is stabilizer added from storage container to the compound mixer?

   1☐ Manually       10☐ Automatically

e) How often is storage tank or transfer line cleaned?

   0☐ Monthly       0☐ Yearly       1☐ Infrequently       9☐ Never

f) How is rinsate handled?

   0☐ Sewer       0☐ Wastewater treatment       0☐ Recycle       9☐ Not applicable

3. Totes/IBCs

   a) What happens to the empty container?

   3☐ Reuse       1☐ Clean and reuse*       22☐ Return to supplier       1☐ Dispose*

b) How is stabilizer transferred from totes to the compound mixer?

   2☐ Manually*       23☐ Automatically

c) How often is transfer line cleaned?

   2☐ Monthly*       0☐ Yearly       5☐ Infrequently*       17☐ Never

d) How is the rinsate handled?

   0☐ Sewer       1☐ Wastewater treatment*       2☐ Recycle       18☐ Not applicable
4. Drums
   a) What happens to the empty drum?
      
      1□ Reuse  1□ Clean and reuse*  2□ Return to supplier  4□ Dispose*

   b) How is stabilizer transferred from drums to the compound mixer?
      3□ Manually*  4□ Automatically

   c) How often is transfer line cleaned?
      0□ Monthly  0□ Yearly  4□ Infrequently*  3□ Never

   d) How is the rinsate handled?
      0□ Sewer  1□ Wastewater treatment*  2□ Recycle  4□ Not applicable

5. a) What happens to the empty packaging material?
      2□ Return to supplier  1□ Dispose into regular landfill*  1□ Dispose into regulated landfill

   b) How is powder stabilizer added to compound mixer?
      1□ Manually  1□ Automatically

6. What procedure is used if organotin stabilizer is spilled?
   5□ Recover as is  28□ Use of absorbent*

7. What procedure is followed to deal with waste organotin stabilizer? *
   3□ Reuse  5□ Dispose into regular landfill  19□ Dispose into regulated landfill
   1□ Stored for now  1□ Burning

8. a) Do you have an environmental management program in your facility?
      17□ Yes  12□ No*

   b) If yes, which one?
      2□ Responsible Care  6□ EMP  1□ ISO 14000  8□ Other

9. Other than the ones questioned above, are you aware of any emissions of organotin stabilizers to the aquatic environment that might occur during receipt, storage and use?

* These items have been addressed specifically in the Guideline.

January 20, 2003

This survey reflects information obtained from 31 of 32 users of tin stabilizers in Canada.
Distribution Modes for Tin Stabilizer sold in Canada in 2001

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<th>PACKAGE TYPE</th>
<th>LIQUID</th>
<th>SOLID (Powder)</th>
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<tr>
<td>Bulk Truck Delivery</td>
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<td>0%</td>
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<td>Semi Bulk 1000, 2000 or 3000 lb units (Liquid Tote or Bulk Bag)</td>
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<tr>
<td>➢ one way</td>
<td>3%</td>
<td>0%</td>
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<tr>
<td>➢ returnable</td>
<td>46%</td>
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<td>Drum (i.e. 220 kg type or 500 lb)</td>
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<td>Small Bag (i.e. 50 lb or 25 kg)</td>
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<td>0%</td>
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### Distribution Modes for Tin Stabilizer sold in Canada in 2003

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<th>PACKAGE TYPE</th>
<th>PHYSICAL FORM</th>
<th>LIQUID</th>
<th>SOLID (Powder)</th>
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<td>Bulk Truck Delivery</td>
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<td>Semi Bulk 1000, 2000 or 3000 lb units (Liquid Tote or Bulk Bag)</td>
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<td>- one way</td>
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<td></td>
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<tr>
<td>- returnable</td>
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<td>Small Bag (i.e. 50 lb or 25 kg)</td>
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Appendix C

Waste Disposal Location Guidelines

Requirements will vary depending on the province. Check your provincial regulations as well. Typical certificates, which the site might have, are:

- Certificate of Approval – Waste Carrier
- Certificate of Approval – Waste Receiver
- Certificate of Approval – Waste Generator (Also for the compounding facility.)

It is the responsibility of the compounding facility to verify that the waste carrier and disposal site have the suitable permits, depending on the waste product and province.
Appendix D

Package Reclamation and Disposal Site Guidelines

Requirements will vary depending on the province. Check your provincial regulations. Typical certificates, which the site might have, are:

- Provincial Ministry of Environment – Certificate of Approval Air.
- Provincial Ministry of Environment – The Waste Generator Registration Number, including, Waste Stream and Waste Number.
- Provincial Ministry of Environment – Provisional Certificate of Approval For a Waste Disposal Site.
- Insurance Coverage.
- Workers Safety and Insurance Board (WSIB) – Clearance Certificate.
- Management system for the safe handling and disposal of containers and recycled packages.

It is the responsibility of the compounding facility to verify that the waste package receiver has all appropriate permits.
Appendix E

Tin Stabilizer Handling Process Flow Chart and Potential Environmental Releases of Tin Stabilizer

**NOTES:**

Site measurements indicate that losses due to venting are minimal.

Storage tanks, process vessels, transfer lines etc. are very rarely, if ever, washed with water.

If the compounding is done at the same site as the processing then the compound is internally transferred to the processing area, without release to the environment.

After processing, the tin stabilizer is fused within the PVC matrix. Any potential losses to the environment will be insignificant.
Appendix F

Participants in the Development of this Guideline

<table>
<thead>
<tr>
<th>COMPANY</th>
<th>LOCATION</th>
<th>PARTICIPANTS</th>
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<tbody>
<tr>
<td>Akcros Chemicals</td>
<td>New Brunswick, NJ</td>
<td>Thomas Grabski</td>
</tr>
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<td>ATOFINA Canada</td>
<td>Oakville, ON</td>
<td>Bob Miller, Robert Roth</td>
</tr>
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<td>ATOFINA Chemicals, Inc.</td>
<td>Philadelphia, PA</td>
<td>John Batt</td>
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<td>Crompton Corporation</td>
<td>Middlebury, CT</td>
<td>Scott Chambers</td>
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<td>IPEX Inc.</td>
<td>Mississauga, ON</td>
<td>Janis Lancelotte, Stan Rodriguez</td>
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<td>Plastmo</td>
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<td>Suzanne Schofield</td>
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<td>Rohm and Haas Company</td>
<td>Philadelphia, PA</td>
<td>Richard Johnson</td>
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<tr>
<td>Tin Stabilizer Association</td>
<td>Philadelphia, PA</td>
<td>Jack McGreevey, Vicki Scott</td>
</tr>
<tr>
<td>Vinyl Council of Canada</td>
<td>Mississauga, ON</td>
<td>Graham Knowles, Marion Axmith</td>
</tr>
<tr>
<td>Environment Canada</td>
<td>National Capital Region</td>
<td>Peter Paine, Art Stelzig, Greg Carreau</td>
</tr>
</tbody>
</table>

Contact Information, for stakeholder follow-up.

Graham Knowles or Marion Axmith:
Vinyl Council of Canada, 5915 Airport Road, Mississauga, ON L4V 1T1
Tel: (905) 678-7405 x 232 (Graham Knowles)
                              x 227 (Marion Axmith)
Fax: (905) 678-0774
E-Mail: gknowles@cpia.com
        maxmith@cpia.ca
Appendix G (2014 Version)

Annual Report on Compliance with the Guideline for the Environmental Management of Tin Stabilizers in Canada

<table>
<thead>
<tr>
<th>Company:</th>
<th>Facility Address:</th>
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<tbody>
<tr>
<td>Prepared by:</td>
<td>Telephone:</td>
</tr>
<tr>
<td>Position Title:</td>
<td>Email Address:</td>
</tr>
<tr>
<td>Reporting Year:</td>
<td>Date Completed:</td>
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</tbody>
</table>

1 **Tin Stabilizer Packaging Type**
Please indicate the packaging type in which stabilizer is received at the facility:

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>1a</td>
<td>Drums</td>
</tr>
<tr>
<td>1b</td>
<td>Totes/IBCs</td>
</tr>
<tr>
<td>1c</td>
<td>Bulk Trucks</td>
</tr>
</tbody>
</table>

2 **Tin Stabilizer Storage**
Do stabilizers continue to be managed and stored at the facility as described in Section 4 of the Guideline?

<p>| | |</p>
<table>
<thead>
<tr>
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<th></th>
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<tbody>
<tr>
<td>2a</td>
<td>Yes</td>
</tr>
<tr>
<td>2b</td>
<td>No</td>
</tr>
</tbody>
</table>

If “no,” please explain:

3 **Handling and Dispensing of Tin Stabilizers**
Do stabilizers continue to be handled and dispensed at the facility as described in Section 5 of the Guideline?

<p>| | |</p>
<table>
<thead>
<tr>
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<tbody>
<tr>
<td>3a</td>
<td>Yes</td>
</tr>
<tr>
<td>3b</td>
<td>No</td>
</tr>
</tbody>
</table>

If “no,” please explain:

4 **Treatment of Rinsate** (Section 6 of the Guideline)
Was stabilizer rinsate generated at the facility during the reporting year, through the rinsing of tanks, lines or containers?

<p>| | |</p>
<table>
<thead>
<tr>
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</thead>
<tbody>
<tr>
<td>4a</td>
<td>Yes</td>
</tr>
<tr>
<td>4b</td>
<td>No</td>
</tr>
</tbody>
</table>

If “yes,” please explain the source of rinsate:

4c Rinsate was reused in process.
4d Rinsate was disposed of at secured landfill or incineration.
4e Rinsate was disposed of on-site at wastewater treatment process.
4f Other (please explain):

If “yes,” was the rinsing conducted according to Section 6 of the Guideline?

<p>| | |</p>
<table>
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</thead>
<tbody>
<tr>
<td>4g</td>
<td>Yes</td>
</tr>
<tr>
<td>4h</td>
<td>No</td>
</tr>
</tbody>
</table>

If “no,” please explain:

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2 Appendix G was updated in July 2014 from the October 2006 version of the Guideline. The rest of the Guideline did not change.
5 Tin Stabilizer-Contaminated Waste
Did the facility generate any waste that contained tin stabilizer during the reporting year?
5a Yes
   | If "yes," state the form of the waste generated:
   | Solid (rags, gloves, absorbent, etc.): | Liquid (obsolete/residual material, etc.):
5b No
   | If "no," please explain why no waste was generated:

If "yes," was the waste managed according to Section 9.1 of the Guideline?
5c Yes
5d No

Was waste that contained tin stabilizer sent out for disposal during the reporting year?
5e Yes
5f No

Does the facility have assurance in writing from the waste management contractor that tin-containing wastes will only be disposed of at a landfill or incinerator that is certified to handle hazardous materials, as per Section 9.0 of the Guideline?
5g Yes
5h No

Does the facility maintain records for all shipments of waste that contain tin stabilizer, including information on all handlers of these wastes?
5i Yes
5j No

6 Empty Containers (Totes and IBCs)
If facility checked question 1b, what type of totes/IBCs were used to received tin stabilizer during the reporting year:
6a Stainless Steel
   | When empty, stainless steel totes are:
   | Returned directly to supplier: | Sent to tote refurbisher: | Reused at the facility: | Not applicable: |
6b Plastic/Metal Cage
   | When empty, plastic/metal cage totes are:
   | Returned directly to supplier: | Sent to tote refurbisher: | Reused at the facility: | Not applicable: |

Do empty totes/IBCs continue to be handled as described in Section 7 of the Guideline?
6c Yes
6d No

Does non-reusable packaging, if any, continue to be handled as described in Section 9.2 of the Guideline?
6e Yes
6f No

Does the facility have assurance in writing from the tote/IBC refurbisher that tin-containing wastes will not enter the aquatic environment?
6g Yes
6h No

Does the facility maintain records for all shipments of empty tin stabilizer totes/IBCs, including information on all handlers of these containers?
6i Yes
6j No
7 Work Instructions
As described in Section 10 of the Guideline, does the facility maintain work instructions/practices and training records, relating to their use of tin stabilizer materials, that address the following ("x" all applicable):

- Receiving
- Empty Packaging
- Storage
- Waste Disposal
- Handling
- WHMIS

8 Spills
Does the facility have a functioning and documented spill response plan in place that contains the elements described in Section 8 of the Guideline?

8a Yes
8b No

Did the facility have any tin stabilizer spills during the reporting year (see Section 8 of the Guideline for definition)?

8c Yes
8d No

- If "yes," please indicate:
  - Number of spills at facility that met definition:
  - Estimated volume of all stabilizer spills (in litres):

9 Documentation
Has the documentation listed in Section 11 of the Guideline been kept at the facility according to the requirements of that section?

9a Yes
9b No

10 Significant Change
Please indicate as appropriate if one or both of the following situations have occurred within your facility during the current reporting period:

10a The type of containers/packaging in which tin stabilizers are received at the facility has changed since the facility was last verified.
10b The facility expanded or relocated elements of its stabilizer infrastructure (e.g., new storage tank, new area within the facility or elsewhere on the property for storage or handling of tin stabilizers).

Briefly describe the significant change.

If the company has relocated or commissioned a new compound facility at a different address, please inform the Vinyl Council of Canada. This is considered a new facility.

11 Guideline Implementation
Has the Guideline for the Environmental Management of Tin Stabilizers in Canada been fully implemented at the facility?

11a Yes
11b No

Approval and Signature of Senior Manager

Date

Appendix G
Thank you for completing Appendix G. This document will not be forwarded to Environment Canada directly, but will be aggregated with the results from other facilities' forms, then submitted to Environment Canada as a consolidated industry report.

Please forward the completed form to:

Vinyl Council of Canada  
5955 Airport Road, Suite 125  
Mississauga, ON  
L4V 1R9

Fax: 905-678-0774

Attention:

Aiñe Curran  
Director General  
Canadian Plastics Industry Association  
Tel.: 905-678-7748, ext. 227  
Email: acurran@plastics.ca