Environnement Canada Environment Canada

# Consultation Document

# Risk Management Measure for Benzenamine, N-phenyl-, Reaction Products with Styrene and 2,4,4-Trimethylpentene (BNST)

**Chemical Abstracts Service Registry Number (CAS RN): 68921-45-9**

**Environment Canada**

**October 2010**

Canada

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## LIST OF ACRONYMS

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| CEPA 1999 | *Canadian Environmental Protection Act, 1999* |
| BNST | ***B****enzenamine,* ***N****-phenyl-, Reaction Products with* ***S****tyrene and 2,4,4-****T****rimethylpentene* |
| L | Litre |
| CAS RN | Chemical Abstract Service Registry Number |
| HPV | High Production Volume |
| EPA | Environmental Protection Agency |
| SPIN | Substances in Nordic Countries database |
| REACH | Registration, Evaluation, Authorization and Restriction of Chemicals |
| VE | Virtual elimination |

# 1 Introduction

## 1.1 Purpose and Scope of the Consultation

The substance ***B****enzenamine,* ***N****-phenyl-, Reaction Products with* ***S****tyrene and 2,4,4-****T****rimethylpentene*, Chemical Abstract Service Registry Number (CAS RN) 68921-45-9, referred to throughout this document as "BNST", was included in Batch 4 of the Challenge initiative under the Chemicals Management Plan[1].

As part of the Challenge process, the Final Screening Assessment Report, published in August 2009, concluded that BNST meets the criteria as set out in paragraph 64(*a*) of CEPA 1999 and the criteria for persistence and bioaccumulation potential as set out in the *Persistence and Bioaccumulation Regulations.*

In the Risk Management Approach for BNST, also published in August 2009[2], the Government of Canada indicated that the risk management action that it would consider is to add BNST to the *Prohibition of Certain Toxic Substances Regulations*, *2005* referred to throughout this document as "Prohibition Regulations".

The intent of this consultation paper is to encourage discussion and to give interested and affected parties an opportunity to provide input or comments regarding the regulatory proposal to add BNST to the Prohibition Regulations, 2005[3].

## 1.2 Objectives

The objectives of this consultation are to:

- Inform interested stakeholders of the regulatory proposal;
- Provide an opportunity for interested stakeholders to comment on the regulatory proposal; and
- Ensure that Environment Canada identifies any questions or concerns from interested stakeholders on this regulatory proposal

## 1.3 Consultations with Interested and Affected Parties

The Government of Canada is committed to providing interested and affected parties with the opportunity to take part in consultations at all stages of the regulatory development process. All interested parties may comment on the regulatory proposal in writing by mail, fax or Email to the addresses provided in Section 6 of this document.

# 2 Background

## 2.1 Final Screening Assessment Report

A notice summarizing the scientific considerations of the final Screening Assessment Report[4] was published by the Government of Canada in the *Canada Gazette*, Part I, on August 1, 2009. The approach taken in this screening assessment report was to examine available scientific information and develop conclusions based on a weight-of-evidence approach and using a precautionary approach, as required under section 76.1 of the *Canadian Environmental Protection Act, 1999* (CEPA 1999).

BNST is a UVCB (Unknown or Variable Composition, Complex Reaction Products, or Biological Materials). BNST is a reaction product of diphenylamine substitution with a blend of styrene and isooctane (also known as di-isobutylene). The reaction product is a mixture of diphenylamines (the mixture differs by the type and extent of substitution of the phenyl group), the nature of which may be variable depending on the ratio of styrene to di-isobutylene used during the manufacture. As it is not a discrete chemical, BNST may be characterized by multiple structures in order to provide a range of properties of the mixture and thus the best possible characterization for assessment purposes. BNST was evaluated based on two structures that are representative of the UVCB.

The Final Screening Assessment Report concluded that BNST is entering or may be entering the environment in a quantity or concentration or under conditions that have or may have an immediate or long-term harmful effect on the environment or its biological diversity. Therefore, it is concluded that BNST meets the criteria set out in paragraph 64(*a*) of CEPA 1999. Additionally, BNST meets the criteria for persistence and bioaccumulation potential as set out in the *Persistence and Bioaccumulation Regulations* (Canada 2000)[4].

## 2.2 Proposed Risk Management Approach

A proposed Risk Management Approach for BNST[2] was also published on August 1, 2009. It identified potential risk management actions to address environmental risk associated with BNST.

The proposed environmental objective is virtual elimination (VE). It follows a proposed risk management objective to achieve the lowest level of release of BNST to the environment that is technically and economically feasible from all life-cycle stages.

In order to achieve the risk management objective and to work towards achieving the environmental objective, the addition of BNST to the Prohibition Regulations is being considered. This Amendment to the Prohibition Regulations would prohibit the manufacture, use, sale, offer for sale and import of BNST and products or formulations containing BNST.[2]

## 2.3 Environmental Monitoring

Monitoring for BNST in the environment will be conducted under a comprehensive monitoring and surveillance strategy for substances of interest under the Chemicals Management Plan. As part of the Chemicals Management Plan monitoring, BNST will be monitored in municipal wastewater, sediment and biota. Monitoring will be used to inform the federal government on releases of BNST to the environment.[2]

# 3. Industrial use of BNST

## 3.1 Current Uses

Based on the industry information provided during the Chemical Management Plan Challenge, the primary end-use application of BNST is as an antioxidant in vehicle engine oils. It also has a minor use as an antioxidant in commercial/industrial lubricants.

Information submitted as part of the Challenge indicates that fewer than five companies in Canada manufactured between 1 000 000 and 10 000 000 kg in 2006 and fewer than five companies imported between 100 001 and 1 000 000 kg for the same year.[2]

BNST is a High Production Volume (HPV) chemical under the HPV Challenge Program of the U.S. Environmental Protection Agency (US EPA). In the United States, according to the information collected by the US EPA, in the years 1990, 1994 and 2002, BNST was imported or used in quantities between 450 000 kg to 45 million kg per year (US EPA 2006). According to the Substances in Preparations in Nordic Countries database (SPIN 2006), this chemical was used in Sweden and Denmark in the years 1999–2004.[2]

## 3.2 Releases and Exposures Sources to the Environment

Approximately 98.3% of the BNST contained in engine oils and lubricants in Canada is either chemically transformed or combusted during use of engine and industrial oils or reprocessed into industrial fuels or base oils following collection of waste engine oil.

The remaining 1.7% is released to the environment through leaks and spills of lubricant that occur during commercial and consumer use, improper disposal of

lubricant and from cleaning containers used to transport lubricant additives containing BNST:[4]

- 1.5% released to sewer and soil, and
- 0.2% released to waste disposal sites.

The total environmental release is estimated to be around 7000 kg/year.

Minimal releases are expected from manufacturing and lubricant blending operations, as it is assumed that existing on-site wastewater treatments are highly efficient in removing BNST.

# 4. Existing Risk Management Tools and Actions

## 4.1 Existing Risk Management Activities

**Canada:**
BNST is not subject directly to any existing Canadian risk management measures. Because BNST is an additive contained in certain vehicle engine oils (crankcase oils) and other lubricating oils, it is indirectly controlled by existing measures for used crankcase oils and other waste lubricating oils. Also, as BNST is a petroleum hydrocarbon, it contributes to measurable concentrations of petroleum hydrocarbon, also known as oil and grease, in water. The quantity of "oil and grease" in water is an analytical parameter subject to various federal-, provincial- and municipal-level effluent discharge quality regulations. Since BNST is a constituent of used oils and lubricants, any measures that act to control releases of used oils would also control releases of BNST[2].

***Provinces and territories:***
Provinces and territories have put in place risk management measures for used crankcase oils. These include prohibitions for land, landfill and sewer disposal of used oils; permits or approval systems to control burning of used oils; prohibitions or guidelines for use of used oils in dust suppression; controls for used oil reprocessing and re-refinery operations; and programs to collect and manage used oil. Ontario also sets specific allowable "oil and grease'' concentration discharges for certain refineries and chemical manufacturing facilities.

***Municipalities***
Municipal sewer use bylaws describe existing limits on the concentration of "oil and grease" in wastewater discharged to municipal wastewater systems means that releases of BNST due to manufacturing, lubricant blending and industrial use at facilities would be effectively controlled.

***United States***
BNST is part of the U.S. EPA's High Production Volume (HPV) Chemical program which requires sponsoring companies to provide and make public basic hazard information on the chemical.

***Europe***
Under the European Union REACH Program, BNST was pre-registered in 2008. By December 1, 2010, manufacturers and importers are required to submit a technical dossier to the European Chemicals Agency containing available information on chemical properties, persistence, bioaccumulation and toxicity.

# 5. The Existing *Prohibition of Certain Toxic Substances Regulations, 2005* and the Proposed Amendment

## 5.1 Prohibition Regulations

The Prohibition Regulations pursuant to subsection 93(1) of the *Canadian Environmental Protection Act, 1999*[3] were registered on February 15, 2005 and came into force 3 months after the day on which they were registered. The Prohibition Regulations were published in the *Canada Gazette*, Part II on March 9, 2005.

The Prohibition Regulations prohibit the manufacture, use, sale, offer for sale or import of the toxic substances listed in Schedule 1 to the regulations. Sections of the Prohibition Regulations are briefly outlined below. The full text of the Prohibition Regulations is available on the CEPA Registry website: www.ec.gc.ca/lcpe-cepa/eng/regulations/detailreg.cfm?intReg=87

### Application

Section 1 sets out that the Prohibition Regulations apply to the toxic substance listed in Schedule 1 and 2 to these Regulations.

### Exceptions

Sections 2 and 3 describe the exceptions to the prohibitions that are permitted. For example, the Prohibition Regulations do not apply to any toxic substance listed in the Schedules to the Regulations that is for use in a laboratory.

### Prohibitions

Sections 4 and 5 set out the prohibitions regarding manufacture, use, sale, offer for sale or import a toxic substance (listed in Schedule 1 and 2) or a mixture or product containing that substance.

### Permits and other administration

Section 6 sets out the permit system established to allow the manufacture, use, sale, offer for sale or import of a toxic substance or a mixture or product containing such a substance referred to in either sections 4 or 5. Section 6 describes the conditions for the issuance of a permit, or the revocation of a permit.

Sections 7-10 set out the reporting requirements, testing requirements for laboratories, certification requirements, record keeping requirements and record keeping.

Sections 11 and 12 are administrative in nature.

## 5.2 Proposed Amendment to the Prohibition Regulations

### Application

As per the final Screening Assessment Report conclusion, BNST is persistent, bioaccumulative and may have harmful effects on aquatic organisms. It is therefore proposed to amend the Prohibition Regulations to add BNST.

The addition of BNST would prohibit the manufacture, use, sale and offer for sale of BNST or mixtures or products containing BNST for all uses unless otherwise specified.

As part of the regulatory action development process, allowing the manufacture, use, sale and offer for sale of BNST, or mixtures or products containing BNST, for a specific and limited time period will be considered. At the end of that time period, no uses would be permitted and the manufacture, use, sale and offer for sale or import of BNST or mixtures or products containing BNST would then be totally prohibited.

## 5.3 Coming into Force

It is anticipated that the proposed amendment to the Prohibition Regulations will be published in the *Canada Gazette*, Part I, no later than August 2011. The publication will be followed by a comment period.

It is anticipated that the final regulations will be published in the *Canada Gazette*, Part II, no later than February 2013.[2]

## 6. Next Steps

Following the distribution of this consultation document, there will be a comment period on the regulatory proposal ending on December 18, 2010. All comments received during the comment period will be taken into consideration while drafting the proposed regulation. Environment Canada welcomes the distribution of this consultation document to any interested and affected parties. A copy of this consultation document will be available on the Chemical Substances website www.chemicalsubstanceschimiques.gc.ca/challenge-defi/batch-lot-4/index-eng.php and a summary report of the consultation discussion will be available on the same website following the comment period.

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. Comments and information submissions on this regulatory proposal should be submitted either by mail, email or fax at:

| **By mail** | **By email or fax** |
|---|---|
| Director<br>Chemical Production Division<br>Environment Canada<br>Place Vincent Massey, 11th Floor<br>351 St-Joseph Blvd.<br>Gatineau QC  K1A 0H3 | Please type “Consultation on BNST prohibition” in the subject line of your message.<br><br>Email: pgpc-cmp.dppc-cpd@ec.gc.ca<br><br>Fax: 819-994-5030 |

# 7. Reference


1 - Environment Canada's Chemical Substances Website: www.chemicalsubstanceschimiques.gc.ca

2 - Environment Canada, *Proposed Risk Management Approach for Benzenamine, N-phenyl-, Reaction Product with Styrene and 2,4,4-Trimethylpentene (BNST)*, August 2009, Environment Canada Website: www.chemicalsubstanceschimiques.gc.ca/challenge-defi/batch-lot-4/index-eng.php

3 - *Prohibition of Certain Toxic Substances Regulations, 2005,* SOR/2005-41 www.ec.gc.ca/lcpe-cepa/eng/regulations/detailreg.cfm?intReg=87

4 - Health Canada an Environment Canada, Screening Assessment for the Challenge *for Benzenamine, N-phenyl-, Reaction Product with Styrene and 2,4,4-Trimethylpentene (BNST)*, August 2009, Environment Canada Website: www.chemicalsubstanceschimiques.gc.ca/challenge-defi/batch-lot-4/index-eng.php