Environment Canada Environnement Canada

Consultation Document

Development of Proposed Environmental Release Guidelines for MAPBAP Acetate

Environment Canada

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Canada

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1. Introduction

Methylium, [4-(dimethylamino)phenyl]bis[4-ethylamino)-3-methylphenyl]-, acetate, also known as MAPBAP acetate, belongs to a class of dyes known as cationic triarylmethanes. It is used as a cationic dye, mainly in the production of paper products.

The Final Screening Assessment Report (fSAR) for MAPBAP acetate was published by Environment Canada and Health Canada in the *Canada Gazette*, Part I, on July 31, 2010, under subsection 77(6) of the *Canadian Environmental Protection Act, 1999* (CEPA 1999). The fSAR, which is available at www.ec.gc.ca/ese-ees/default.asp?lang=En&n=403207BF-1, concluded that MAPBAP acetate is entering or may be entering the environment in a quantity or a concentration or under conditions that have or may have an immediate or long-term harmful effect on the environment or its biological diversity.

The fSAR also concluded that MAPBAP acetate meets the criteria for persistence but does not meet the criteria for bioaccumulation, as defined in the *Persistence and Bioaccumulation Regulations* under CEPA 1999. The presence of MAPBAP acetate in the environment results primarily from human activity.

The fSAR did not conclude that MAPBAP acetate meets the conditions set out in subsection 77(4) of CEPA 1999. As a result, MAPBAP acetate is not subject to the virtual elimination provisions under CEPA 1999 and will be managed using a life-cycle approach, to prevent or minimize its release into the environment.

The proposed human health objective for MAPBAP acetate is to minimize human exposure to the greatest extent practicable. As a human health precaution, the Government of Canada plans to implement the Significant New Activity provisions under CEPA 1999 for this substance. This would require that any proposed new manufacture, import or use be subject to further assessment and determine if the new activity requires further risk management consideration.

The proposed environmental objective for MAPBAP acetate is to reduce releases of the substance to soil and water. Environment Canada is planning the development of Environmental Release Guidelines, referred to hereafter as the “Guidelines,” for MAPBAP acetate to limit releases to water from pulp and paper mills using MAPBAP acetate or products containing MAPBAP acetate, under paragraph 54(1)(*c*) of CEPA 1999. The proposed Guidelines will assist pulp and paper facilities using MAPBAP acetate or products containing MAPBAP acetate to predict when the concentrations in effluent may have an effect on the receiving waters, and allow them to adjust their supplies and processes accordingly.

In support of the development of the proposed Guidelines, Environment Canada will be holding public consultation sessions in March 2012, with the following objectives:

- Provide background and context on the risk management approach for MAPBAP acetate.
- Provide an opportunity for stakeholders to comment on the development of the proposed Guidelines for the reduction of MAPBAP acetate released from pulp and paper mill effluents and on the proposed risk management of MAPBAP acetate.

The Government of Canada is committed to providing interested and affected stakeholders with the opportunity to take part in consultations at this stage in the development of the Guidelines.

All interested stakeholders may comment on the proposed Guidelines in writing by mail, fax or email to the address provided in Section 3 of this document.

2. Industrial Uses of MAPBAP Acetate

2.1 Current Uses and Industrial Sectors

Information was collected through industry surveys conducted for the years 2005 and 2006 under *Canada Gazette* notices issued pursuant to section 71 of CEPA 1999, as well as from the Challenge questionnaire submissions. The Challenge for MAPBAP Acetate was published in the *Canada Gazette* on January 31, 2009.[1] These notices requested data on the Canadian manufacture and import of MAPBAP acetate. In Canada in 2005 and 2006, no company manufactured MAPBAP acetate in quantities greater than or equal to 100 kg. For the 2006 calendar year, fewer than four Canadian companies reported importing a total of between 10 001 and 100 000 kilograms (kg) of MAPBAP acetate in a paper dye, and, either alone or contained in a mixture, a product or manufactured item (noted confidential use).

Fewer than 20 companies reported using MAPBAP acetate and/or were identified by importers as customers who used MAPBAP acetate, and the total quantity reportedly used was between 10 000 and 100 000 kg in 2006.

MAPBAP acetate is used as a dye mainly in the production of certain paper products made from mechanical grade pulp, such as newsprint. The concentration of the substance in dye products ranges from 30% to 60%. Another use for MAPBAP acetate reported in the response to the section 71 notice for 2006 was indicated as confidential business information. Quantities, uses and releases from this confidential use were considered in estimating environmental releases.

2.2 Releases to the Environment from Pulp and Paper Mills

As part of the fSAR, a site-specific exposure analysis was conducted in the aquatic environment for 10 pulp and paper mills where MAPBAP acetate was reportedly used as a dye in the production of paper products. The quantity of MAPBAP acetate used at each site was in the range of 1000 to 10 000 kg/year. Two modeling scenarios were developed: 1) a worst-case scenario that assumed an 80% retention rate of MAPBAP acetate in the final product, and a low degree of mill closure (i.e. low level of recycling [reuse] of process water within the mill); and 2) a best-case scenario that assumed a retention rate of 90% and a high degree of mill closure. The estimated retention rates (80% and 90% respectively) were sourced from the *Emission Scenario Document on Non-integrated Paper Mills* from the Organisation for Economic Co-operation and Development.[2]

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[1] http://canadagazette.gc.ca/rp-pr/p1/2009/2009-01-31/html/notice-avis-eng.html#d105

[2] *Emission Scenario Document on Non-integrated Paper Mills* from the Organisation for Economic Co-operation and Development: www.oecd-ilibrary.org/oecd-series-on-emission-scenario-documents-no-16_5l9hqcnqv5vg.pdf;jsessionid=s1krqak49tbs.delta?contentType=/ns/Article&itemId=/content/article/oecd_papers-v6-art23-en&containerItemId=/content/serial/16812328&accessItemIds=http://oecd.metastore.ingenta.com/content/serial/1995283x,/content/issue/oecd_papers-v6-6-en&mimeType=application/pdf

After accounting for the influence of process water reuse on the overall retention rate of MAPBAP acetate in the final product, and the release of container residue expected from the on-site cleaning of MAPBAP acetate containers (estimated at 0.3%), the maximum fraction of MAPBAP acetate lost from the production process to wastewater (prior to any wastewater treatment) was estimated to be 8.3%. The models then assumed that the process wastewater containing MAPBAP acetate was treated using primary and secondary wastewater treatment systems, with a conservative model-predicted removal rate of 3.4%.

When MAPBAP acetate is released into a water body, it partitions into suspended particulate matter and to bottom sediments, where sediment-dwelling organisms would be exposed to the substance. Based on the available experimental evidence, MAPBAP acetate is expected to cause harm to aquatic organisms at relatively low concentrations.

3. Next Steps

Industry and other interested stakeholders are invited to submit comments on the draft outline of the proposed Guidelines (refer to Section 4 of this consultation document) prior to **March 30, 2012**. All comments received before this date will be considered in the development of the proposed Guidelines.

Environment Canada welcomes the distribution of this consultation document to any interested and affected stakeholders. A copy of this consultation document will be available on the website of the CEPA Environmental Registry at www.ec.gc.ca/lcpe-cepa/eng/participation/default.cfm.

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 proposal should be submitted either by mail, email or fax to:

Forestry, Agriculture and Aquaculture Division
Environment Canada
Place Vincent Massey
351 St. Joseph Boulevard
Gatineau QC K1A 0H3
Fax: 819-994-9848
Email: MAPBAP@ec.gc.ca

Please include "Consultation on MAPBAP Acetate" in the subject line of your message.

4. Elements for Possible Inclusion in Proposed Guidelines for MAPBAP Acetate

4.1 Definitions

The definitions are intended to clarify and simplify the text of the proposed Guidelines. When possible, definition will be taken from existing regulatory instruments, such as the *Pulp and Paper Effluent Regulations* pursuant to the *Fisheries Act*. Some examples could include:

> **"*MAPBAP dye"***: *means a cationic dye (basic) with the chemical name Methylium, [4-(dimethylamino)phenyl]bis[4-(ethylamino)-3-methylphenyl]- (MAPBAP acetate), Chemical Abstracts Service (CAS) Registry Number 72102-55-7.*
>
> ***"Retention"***: *means the percentage (%) by mass of the MAPBAP acetate bonded to pulp or paper products.*
>
> ***"Operator"***: *means a person who operates, has control or custody of or is in charge of a mill.*[3]
>
> ***"Mill"***: *means a plant that produces pulp, paper, paperboard, hardboard, insulating or building board.*[4]
>
> ***"Paper product"***: *means paper, coated paper, paperboard, hardboard, boxboard, linerboard, insulating board, building board, corrugating medium, tissue, moulded cellulose product and any other product directly derived from pulp.*[3]
>
> ***"Pulp"***: *means processed cellulose fibres that are derived from wood, other plant material or recycled paper products.*[3]
>
> ***"Primary treatment"***: *means the settlement tanks that partly remove solid and organic material from a pulp and paper mill wastewater and produce outputs in the form of primary sludge and scum.*

4.2 Scope

The proposed Guidelines would apply to pulp and paper mills that use MAPBAP acetate or products containing MAPBAP acetate and recommend actions to limit potential releases of MAPBAP acetate to water. These actions can include proper storage, handling and manufacturing practices, as well as wastewater treatment guidance and targets.

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[3] *Pulp and Paper Effluent Regulations*

[4] *Pulp and Paper Mill Defoamer and Wood Chip Regulations*

4.3 Performance Guidelines

The proposed Guidelines could include preventive elements (e.g. secondary containment) and operational targets, to limit releases of MAPBAP acetate to water, such as:

4.3.1 *The retention of MAPBAP acetate in the pulp and paper process should not be below the limits specified in Appendix 1.*

4.3.2 *The removal of solids in the primary wastewater treatment, which allows for MAPBAP acetate removal by adsorption, should not be below the limits specified in Appendix 1.*

4.3.3 *A containment plan should be in place to prevent the release of MAPBAP acetate to the environment or the sewer system during its storage (fixed tanks, tote, drum or any other container), handling and disposal.*

a. The secondary containment[5] should be configured with capacity equal to or greater than:

- *110% of the capacity of the tank if there is only one tank; or,*
- *100% of the capacity of the largest tank plus 10% of the aggregate capacity of all other tanks.*

b. During the purge of MAPBAP acetate from the equipment or the piping, operational measures for its collection or recirculation should be in place to prevent MAPBAP acetate releases to water.

4.4 Declaration

The declaration is intended to indicate whether the pulp and paper mill using MAPBAP acetate will implement the proposed Guidelines. Some requirements that could be included are as follows:

The operator of a mill that is subject to these proposed Guidelines should indicate in writing to the Minister of the Environment (no later than six months after publication or six months after starting to use MAPBAP acetate) its intention to implement the Guidelines. A written statement should also be submitted to the Minister of the Environment if the use of MAPBAP acetate is permanently ceased.

4.5 Monitoring

This section is used to describe what could be the content and the time scale of the monitoring.

[5] Guidelines for Secondary Containment for Above Ground Storage Tanks, Industrial Waste and Wastewater Branch, Alberta Environmental Protection, May 16, 1997

An example of a monitoring requirement that could be included is as follows:

> *The operator of a mill that is subject to the proposed Guidelines should evaluate, at least once a year, their compliance with the limitations specified in Appendix 1 and record the quantity of MAPBAP acetate released to the environment or discharged to a sewer system during its storage, handling or disposal.*

4.6 Reporting

This section would describe the information that mill operators could be requested to report. Some examples of reporting requirements could include:

> *The operator of a mill that is subject to the proposed Guidelines should provide a report to the Minister of the Environment that should include the following:*
>
> - *The name and address of the mill.*
> - *The technical contact, telephone and fax numbers, and email address.*
> - *The quantity of MAPBAP acetate purchased or used during the previous calendar year.*
> - *Results of the tests referred to in section 4.5 and the date of testing.*
> - *The quantity of MAPBAP acetate that was released to the environment or in a sewer system as a result of its storage, handling or disposal.*
>
> *The operator should provide its first report to the Minister of Environment three years after the final publication of the proposed Guidelines. An annual report should subsequently be required only if the limits of Annex 1 were not met or if one or more releases of MAPBAP acetate into the environment occurred during storage, handling or disposal.*

4.7 Record Keeping

This section outlines the proposed record-keeping requirements. An example of a requirement could include:

> *The operator of a mill that is subject to the proposed Guidelines should retain all relevant records for a period of at least five years beginning on the date of their creation and make them available to the Minister of the Environment upon request.*

4.8 Appendix 1: Limits

Substance	Minimum retention in paper products[1]	Solids removal efficiency of primary treatment [2]
MAPBAP acetate (CAS 72102-55-7)	90%	75%

(1) A method for determining dye retention on fibres is shown in Appendix 3.
(2) The calculation of primary treatment solids removal efficiency is shown in Appendix 2.

4.9 Appendix 2: Calculation of Solids Removal Efficiency of Primary Wastewater Treatment

$$ESS = (1 - \frac{SS_o}{SS_I}) \times 100\%$$

Where:

ESS = means solids removal efficiency (%)
SS_o = means solids concentration at the outlet of the primary treatment system (mg/L)
SS_I = means solids concentration at the inlet of the primary treatment system (mg/L)

Note: The sampling should be conducted while the primary treatment system is stable and the mill is in operation.

4.10 Appendix 3: Proposed Method for Measuring Dye Retention on Fibres

The method is currently under development.

www.ec.gc.ca

Additional information can be obtained at:

Environment Canada
Inquiry Centre
10 Wellington Street, 23rd Floor
Gatineau QC K1A 0H3
Telephone: 1-800-668-6767 (in Canada only) or 819-997-2800
Fax: 819-994-1412
TTY: 819-994-0736
Email: enviroinfo@ec.gc.ca