



Proposed Acceptability for Continuing Registration

PACR2004-43

Re-evaluation of Aluminum and Magnesium Phosphide

The purpose of this document is to inform registrants, pesticide regulatory officials and the Canadian public that the Pest Management Regulatory Agency (PMRA) has completed a re-evaluation of aluminum and magnesium phosphide. The PMRA has determined that aluminum and magnesium phosphide are acceptable for continued registration provided that the proposed mitigation measures are adopted. Additional data requirements are identified. Upon finalization of the re-evaluation decision, the PMRA will provide registrants of products containing aluminum and magnesium phosphide with specific direction on how to address these measures and requirements.

This Proposed Acceptability for Continuing Registration (PACR) document provides a rationale for the proposed regulatory decision for aluminum and magnesium phosphide. The PMRA will accept written comments on this proposal up to 45 days from the date of publication of this document. Please forward all comments to the Publications Coordinator at the address below.

(publié aussi en français)

26 November 2004

**This document is published by the Alternative Strategies and Regulatory Affairs Division,
Pest Management Regulatory Agency. For further information, please contact:**

**Publications Coordinator
Pest Management Regulatory Agency
Health Canada
2720 Riverside Drive
A.L. 6605C
Ottawa, Ontario
K1A 0K9**

**Internet: pmra_publications@hc-sc.gc.ca
www.pmra-arla.gc.ca**

**Information Service:
1 800 267-6315 or (613) 736-3799
Facsimile: (613) 736-3758**



ISBN: 0-662-38744-9 (0-662-38745-7)

Catalogue number: H113-18/2004-43E (H113-18/2004-43E-PDF)

**© Her Majesty the Queen in Right of Canada, represented by the Minister of Public Works and Government Services
Canada 2004**

All rights reserved. No part of this information (publication or product) may be reproduced or transmitted in any form or by any means, electronic, mechanical photocopying, recording or otherwise, or stored in a retrieval system, without prior written permission of the Minister of Public Works and Government Services Canada, Ottawa, Ontario K1A 0S5.

Table of Contents

1.0	Background	1
2.0	Re-evaluation of aluminum and magnesium phosphide	1
3.0	Proposed re-evaluation decision	2
4.0	Proposed regulatory actions	3
4.1	Maximum residue limits	3
5.0	Additional data requirements	4
6.0	Supporting documentation	4
Appendix I	Products containing aluminum and magnesium phosphide registered in Canada as of June 2003	5
Appendix II	Use standard for restricted products containing aluminum and magnesium phosphide	7

1.0 Background

The PMRA is re-evaluating all pesticides, both active ingredients and formulated end-use products (EPs), that were registered prior to 31 December 1994 to ensure that their continued acceptability is examined using current scientific approaches. Regulatory Directive [DIR2001-03](#), *PMRA Re-evaluation Program*, presents the details of the re-evaluation activities and program structure.

Aluminum and magnesium phosphide have been re-evaluated by the PMRA under Re-evaluation Program 1 as described in DIR2001-03. Under Program 1, the PMRA relies as much as possible on foreign reviews, typically United States Environmental Protection Agency (USEPA) Reregistration Eligibility Decision (RED) documents, to assess Canadian pest control products. For products to be re-evaluated under Program 1, there must exist a suitable foreign review that meets the following conditions:

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

Based on the outcome of foreign reviews, the PMRA will propose, under Program 1, a regulatory decision and appropriate mitigation measures for Canadian uses of an active ingredient.

The USEPA conducted a re-evaluation of aluminum and magnesium phosphide and conclusions were published in a 1998 RED document. In its re-evaluation of aluminum and magnesium phosphide, the PMRA based its conclusions on this 1998 RED document, taking into account the Canadian use pattern and Canadian issues (e.g., the federal Toxic Substances Management Policy [TSMP]). A review of the chemistry of Canadian products was also conducted.

2.0 Re-evaluation of aluminum and magnesium phosphide

Active substance:	Aluminum phosphide
Common name:	Aluminum phosphide
Chemical (biological) name:	
IUPAC:	Aluminum phosphide
CAS:	Aluminum phosphide
CAS number:	20859-73-8

Active substance:	Magnesium phosphide
Common name:	Magnesium phosphide

Chemical (biological) name:
IUPAC: Magnesium phosphide
CAS: Magnesium phosphide
CAS number: 12057-74-8

In Canada, aluminum phosphide was first registered in 1961 and magnesium phosphide in 1998. Although magnesium phosphide was registered in Canada after 1995, it was included in this re-evaluation because its use pattern is identical to that of aluminum phosphide and its registration was based on the aluminum phosphide database.

Aluminum and magnesium phosphide both react with humid air to release phosphine gas, a fumigant with insecticidal properties. Both are registered with the PMRA for indoor fumigation of raw agricultural commodities, animal feed, processed food commodities and non-food commodities to control insects in sealed containers or structures including mills, food processing plants, warehouses, concrete upright bins, silos, flat houses, grain bins, bunkers, area under tarpaulins, railcars, containers, trucks, vans, ships, bulk dry cargo vessels and tankers. These products are also registered for outdoor fumigation of burrows to control rodents and moles in non-domestic area, non-cropland and agricultural areas. Currently registered Canadian products containing aluminum and magnesium phosphide are listed in Appendix I.

Based on the comparison of American and Canadian use patterns, the USEPA assessment described in the RED document for aluminum and magnesium phosphide is considered to be an adequate basis for the proposed Canadian re-evaluation decision. The details of the assessments conducted by the USEPA are presented in the USEPA RED for aluminum and magnesium phosphide.

The federal TSMP and Regulatory Directive [DIR99-03](#) were taken into consideration during the review of aluminum and magnesium phosphide, and it was concluded that aluminum and magnesium phosphide are not TSMP Track 1 substances. The technical products are not expected to contain impurities of toxicological concern as identified in Regulatory Directive [DIR98-04](#) or TSMP Track 1 substances as identified in Appendix II of DIR99-03.

3.0 Proposed re-evaluation decision

The USEPA published a RED document for aluminum and magnesium phosphide addressing the main science areas that are necessary for Canadian regulatory decisions, i.e., human health and the environment. This document addressed uses of aluminum and magnesium phosphide that are also registered in Canada. Based on the USEPA RED and Canadian use pattern, the PMRA has determined that aluminum and magnesium phosphide are acceptable for continued registration provided that the mitigation measures specified in Section 4.0 are adopted. Additional data requirements are identified in Section 5.0.

The PMRA will accept written comments on this proposal up to 45 days from the date of publication of this document to allow interested parties an opportunity to provide input into the proposed re-evaluation decision. Registrants of products containing aluminum and magnesium phosphide should not apply for label amendments or submit the additional data described in Section 5.0 during this comment period; they will be informed by letter of the specific instructions for addressing label changes and data requirements once the re-evaluation decision has been finalized.

4.0 Proposed regulatory actions

The PMRA is proposing the same mitigation measures as those published in the 1998 USEPA RED for aluminum and magnesium phosphide. Therefore, current Canadian labels must be modified as follows:

1. Reduction of the phosphine gas exposure limit from 0.3 ppm to 0.03 ppm. After application, aluminum and magnesium phosphide react with moisture to release phosphine gas, a fumigant with insecticidal properties. Current Canadian labels require that worker exposure to phosphine gas not exceed the 8-hour threshold limit value-time weighted average (TLV-TWA) of 0.3 ppm. This exposure limit should be reduced to 0.03 ppm.
2. Addition of a buffer zone of 150 m around all treated sites during fumigation and aeration until the concentration of phosphine gas in the buffer zone is within permitted limits.
3. Inclusion of all label statements listed in the use standard in Appendix II of this document.

It should be noted that Canadian registered EPs that contain phosphine gas as the main active ingredient for use as a fumigant (e.g., ECO₂FUME, Registration Number 27684) are also subject to the above regulatory actions.

Label revisions must be submitted within 90 days of finalization of the re-evaluation decision. The registrants will be informed by letter of the specific requirements and the regulatory options available to comply with this decision.

4.1 Maximum residue limits

Aluminum and magnesium phosphide are currently registered for use on a number of stored food and feed crops in Canada, and there are currently no maximum residue limits (MRLs) specified for phosphine in Table II, Division 15 of the Canadian Food and Drug Regulations. Phosphine is used on agricultural crops in other countries. Currently, any residues of phosphine on food grown or imported in Canada must not exceed 0.1 ppm, a

general MRL specified in subsection B.15.002(1) of the Food and Drug Regulations. However, changes to this general MRL may be implemented in the future, as indicated in Discussion Document [DIS2003-01](#), *Revocation of the 0.1 ppm General Maximum Residue Limit for Food Pesticide Residues [Regulation B.15.002(1)]*.

5.0 Additional data requirements

The registrants of technical aluminum and magnesium phosphide are required to submit the following within 24 months of finalization of the re-evaluation decision:

- all data (as they relate to Canadian use patterns) submitted to the USEPA in response to the data call-in prior to the reregistration in the United States and the USEPA's Data Evaluation Reports (DERs);
- all data (as they relate to Canadian use patterns) that were required by the USEPA as a condition of reregistration of aluminum and magnesium phosphide;
- a commitment and schedule to address Canadian requirements that are not addressed through submission of the data outlined above. These are outlined in the PMRA's data code (DACO) tables for use-site categories # 3, 12, 20 and 32. The registrants are required to address the following sections of DACO tables:
 - for the TGAI: DACOs 2 through 9, inclusive; and
 - for the EP: DACOs 5, 8 and 9.

The above data and additional data may be required sooner if expansion of current uses of aluminum or magnesium phosphide is requested.

6.0 Supporting documentation

PMRA documents, such as DIR2001-03, and DACO tables can be found on our website at www.pmra-arla.gc.ca. PMRA documents are also available through the Pest Management Information Service. Phone: 1 800 267-6315 within Canada or 1 (613) 736-3799 outside Canada (long distance charges apply); Fax: (613) 736-3758; E-mail: pmra_infoserv@hc-sc.gc.ca.

The federal TSMP is available through Environment Canada's website at www.ec.gc.ca/toxics.

The USEPA RED document *Aluminum and Magnesium Phosphide* is available on the Office of Pesticide Programs' website at www.epa.gov/pesticides/reregistration under Chemical Status.

Appendix I Products containing aluminum and magnesium phosphide registered in Canada as of June 2003

Active ingredient	Registrant	Registration number	Guarantee (%)	Product name	Class
Aluminum phosphide	Midland Fumigant Co. Inc.	25319	60	Aluminum Phosphide 60% Bags	Restricted ¹
Aluminum phosphide	Midland Fumigant Co. Inc.	25318	60	Aluminum Phosphide 60% Tablets	Restricted ²
Aluminum phosphide	Midland Fumigant Co. Inc.	25317	60	Aluminum Phosphide 60% Pellets	Restricted ³
Aluminum phosphide	Midland Fumigant Co. Inc.	25316	85	Aluminum Phosphide 60% Technical Insecticide	Technical ⁴
Aluminum phosphide	Casa Bernardo Ltd.	23843	57	Clean Crop Gastoxin Fumigation Sachet	Restricted
Aluminum phosphide	Casa Bernardo Ltd.	23842	57	Gastoxin Fumigation Tablets for Control of Groundhogs	Restricted
Aluminum phosphide	Casa Bernardo Ltd.	23765	80	Gastoxin Technical Aluminum Phosphide	Technical
Aluminum phosphide	Degesch America Inc.	22699	82.8	Technical Grade Aluminum Phosphide	Technical
Aluminum phosphide	Degesch America Inc.	20252	55	Degesch Phostoxin Prepac Rope	Restricted
Aluminum phosphide	Pestcon Systems Inc.	19227	55	Fumitoxin Aluminum Phosphide Tablets	Restricted
Aluminum phosphide	Pestcon Systems Inc.	19226	55	Fumitoxin Aluminum Phosphide Pellets	Restricted
Aluminum phosphide	Casa Bernardo Ltd.	17188	57	Clean Crop Gastoxin Fumigation Pellets	Restricted
Aluminum phosphide	Casa Bernardo Ltd.	17187	57	Clean Crop Gastoxin Fumigation Tablets	Restricted
Aluminum phosphide	Degesch America Inc.	16438	57	Degesch Phostoxin Tablets Prepac	Restricted

¹ Product 25319 expired on 31 December 2003. This product was included in this review.

² Product 25318 expired on 31 December 2003. This product was included in this review.

³ Product 25317 expired on 31 December 2003. This product was included in this review.

⁴ Product 25316 expired on 31 December 2003. This product was included in this review.

Active ingredient	Registrant	Registration number	Guarantee (%)	Product name	Class
Aluminum phosphide	Degesch America Inc.	16351	55	Degesch Phostoxin Coated Round Tablets for Control of Groundhogs	Restricted
Aluminum phosphide	Degesch America Inc.	15736	55	Degesch Phostoxin Coated Tablets	Restricted
Aluminum phosphide	Degesch America Inc.	15735	55	Degesch Phostoxin Coated Pellets	Restricted
Magnesium phosphide	Degesch America Inc.	26524	66	Degesch Magtoxin Prepac Spot Treatment	Restricted
Magnesium phosphide	Degesch America Inc.	26523	96	Degesch Magtoxin Granules	Restricted
Magnesium phosphide	Degesch America Inc.	26188	56	Degesch Fumi-Cel and Fumi-Strip	Restricted
Magnesium phosphide	Degesch America Inc.	25581	93	Technical Grade Magnesium Phosphide	Technical

Appendix II Use standard for restricted products containing aluminum and magnesium phosphide

(Note: This use standard does not identify all label requirements for individual end-use products such as first aid statements, disposal statements, precautionary statements and supplementary personal protective equipment that may be required. Additional information on labels for currently registered products should not be removed unless it contradicts information in this use standard.)

COMMON NAME: Aluminum and magnesium phosphide

CHEMICAL NAME: Aluminum and magnesium phosphide

FORMULATION TYPE: Dust, solid, granular, pelleted/tableted, impregnated material

USE-SITE CATEGORIES: 12 Stored Food and Feed
 20 Structural
 32 Various Outdoor Sites

[For all products:]

Safety Recommendations

At least two persons, a certified applicator and trained person, or two trained persons under the direct supervision of the certified applicator must be present during fumigation of structures when entry into the structure for application of the fumigant is required.

At least two persons, a certified applicator and trained person, or two trained persons under the direct supervision of a certified applicator, must be present and must wear the proper safety equipment when a structure that is under fumigation is to be entered.

The certified applicator must maintain visual and/or voice contact with all fumigation workers during the application of the fumigants.

All residents within 225 m of a fumigated structure/site must be notified a 24 hours in advance of the fumigation.

Report all thefts of product immediately to proper local officials.

Registrant must be informed of any incident involving the use of this product.

Under no circumstances shall food, feed and/or raw agricultural commodities that may be used directly as foods come into contact with aluminum phosphide.

Directions for Use

Piling of tablets, pellets or bags or the addition of liquid to the product is prohibited.

Placarding of Fumigated Areas

Signs are to be made of substantial material that can be expected to withstand adverse weather conditions.

[Placards must bear:]

A 24-hour emergency response telephone number.

Applicator and Worker Exposure

The level of phosphine gas may be higher at the core of the commodity than the surrounding air. Monitoring is required when unloading or otherwise disturbing a commodity that has been fumigated to ensure that liberation of gas from the treated commodity does not result in unacceptable levels of hydrogen phosphide.

Fumigation of railcars, containers, trucks, vans and other transport vehicles

Written notification must be provided to the receiver of railcars, railroad boxcars, shipping containers and other vehicles that are being fumigated in transit. Notification must be made prior to the actual receipt of a fumigated vehicle or container by a consignee. A copy of the Applicator's Manual must precede or accompany all transportation containers or vehicles.

Upon receipt of the railcar, railroad boxcars, shipping containers and other vehicles, a trained person must perform the aeration process and must document in writing that monitoring has been conducted and that aeration has been completed. This training shall include, at a minimum, proper and safe aeration handling procedures.

Aeration of railcars, railroad boxcars or shipping containers is prohibited en route.

Environmental Precautions

DO NOT contaminate irrigation or drinking water supplies or aquatic habitats such as lakes, rivers, sloughs, ponds, prairie potholes, creeks, marshes, streams, reservoirs and wetlands by cleaning of equipment or disposal of wastes.

Carefully inspect the outside and inside of the structure to be treated prior to application of the fumigant to ensure the absence of nesting or roosting birds. Avoid application if birds are present.

[For products that include a registered use for rodent burrows:]

Safety Recommendations

Wear a National Institute for Occupational Safety and Health (NIOSH) approved respirator during application to rodent burrows.

This product must not be applied into a burrow system that is within 5 m of a building, especially a residence, that is, or may be, occupied by humans and/or animals.

Do not apply to burrows that open under or into a building, especially a residence that is, or may be, occupied by humans and/or animals.

Document any burrows that open under or into occupied buildings.

Before treating a rodent burrow on a property containing an inhabited structure, the applicant must provide the customer with the appropriate section of the Applicator's Manual.

Environmental Precautions

To avoid unintentional poisonings of endangered, threatened or vulnerable species, do not apply this product without confirming that the burrow, den or tunnel is inhabited by the pest.