MEMORANDUM OF AGREEMENT BETWEEN
THE UNITED STATES ENVIRONMENTAL PROTECTION AGENCY AND
SIGNATORY REGISTRANTS OF
PHOSPHINE BASED FUMIGANTS

This Memorandum sets forth the terms of an Agreement between the United States Environmental Protection Agency ("EPA"), and the undersigned registrants (hereinafter "registrants") regarding the use of phosphine fumigant products. As noted in the Aluminum and Magnesium Phosphide Reregistration Eligibility Decision published November 1998, and in its Federal Register Notice dated December 23, 1998 (63 FR 71123), EPA is concerned that the use of phosphine fumigant products, as used under present registrations, may present unreasonable risks to workers handling such products as well as to bystanders in the vicinity of treated locations. The undersigned registrants and EPA have agreed to measures set forth below in an effort to address and resolve those concerns. The terms of this Agreement will be incorporated as a term and condition of registration for each of the registrations listed in Appendix A ("List of Registrations Subject to Memorandum of Agreement").

The specific terms of this Agreement are as follows:

A. Label Amendments

By January 1, 2001 Registrants shall submit to EPA draft interim guidance on the preparation of fumigation management plans. The Agency will provide comments to the registrants on this guidance within 60 days of receipt. Registrants shall certify to EPA that they have provided copies of this interim guidance to all distributors of phosphine products after incorporating EPA's comments. This document will also serve as input to the development of more detailed, final guidance that will be developed by the registrants and incorporated into training modules and certification and training programs. This interim guidance will be incorporated into the Applicator's Manual and become part of the new labeling in accord with the following paragraph.

Within ninety (90) days of receipt of the Agency's comments on the interim guidance, each registrant shall submit to EPA, for approval, amended labels and Applicator's Manuals that include label revisions identified in Appendix B ("Revisions to Phosphine Labels"). The amended labels\manuals shall be submitted with a cover letter stating that the amendments are requested in order to satisfy the terms of this Agreement, streamline existing labels, or otherwise satisfy other EPA and state requirements (e.g. PR Notice 00-3). Any changes to labels or the Applicator's Manual other than those specifically required by this agreement must be identified in the cover letter accompanying the proposed amendments. Within six (6) months of receiving stamped and approved labels from the Agency, all phosphine products released for shipment shall bear the amended approved labels and be accompanied by the Applicator's Manuals.

B. Incident Reporting

Each registrant shall conduct a two-year project to identify and report toxic or adverse effect incidents associated with phosphine based fumigants, including failures of performance related to public health uses.

Each registrant shall designate a specific individual as the registrant's primary FIFRA section 6(a)(2) compliance officer, and shall establish a company-wide system to assure that any incident reports received by the registrant's employees or agents (including contractors considered agents under the 6(a)(2) rule) are promptly forwarded to that individual.

Each registrant shall instruct supplemental registrants and exclusive distributors and wholesalers to promptly forward to the registrant any information required to be submitted under the 6 (a)(2) rule. 40 C.F.R. part 159.184 defines specific criteria for what needs to be reported. Each registrant shall make good faith efforts to seek other sources of incident information and shall exercise due diligence in seeking pertinent information regarding each incident of which it becomes aware.

In addition to the reporting required under FIFRA section 6(a)(2) and 40 C.F.R. part 158, each registrant shall provide a summary report to EPA on April 1, 2001 (for the calendar year 2000) and on April 1, 2002 (for the calendar year 2001) which shall include an analysis of commonalities among the incidents and any trends that can be discerned. Further, the report shall include a discussion of what steps, if any, might prevent the recurrence of such incidents in the future. Finally, the report shall describe the efforts made by the registrants to gather incident information.

Following submission of the April 1, 2002 summary report and review by the Agency, registrants agree to work with the Agency to determine whether similar summary reports should continue to be provided in the future.

C. Monitoring Studies

By April 1, 2001, the registrants shall submit to EPA protocols/feasibility studies for exposure monitoring studies. These protocols must be designed to be representative of the wide variety of fumigation activities. EPA will be available to meet prior to submission of the protocols, to discuss and provide guidance on protocol requirements. More generally, the protocols should be developed with the cooperation and participation of representatives of the registrants, EPA, USDA, the Aluminum and Magnesium Phosphide Coalition, and other experts in the field. If, upon consultation with the registrants and other stakeholders, EPA decides that studies are not feasible for a category of fumigation, then studies will not be required for that category. Within 3 months following approval of the protocols, the EPA shall submit an

Information Collection Request (ICR) for the necessary data to the Office of Management and Budget (OMB) for approval. Upon approval by OMB of the ICR the Agency will issue the necessary section 3(c)(2)(B) data call-ins for this data.

The studies shall be designed to produce data that will characterize the rate of decay/dissipation of phosphine at varying distances from fumigated structures/containers/sites. Sampling locations shall reflect potential exposures to fumigators, aerators, and bystanders. The studies should, where feasible, include continuous monitoring of phosphine concentrations throughout the full fumigation/aeration cycle; alternatively, if grab samples are used, they should be taken in a manner that permits a reliable prediction of the relevant decay/dissipation curves. Studies shall reflect a representative variety of atmospheric conditions. The studies must be carried out by qualified personnel and involve representatives from the registrants and/or the Coalition.

D. Worker Exposure Limits

In order to assist EPA's efforts to determine whether the current worker exposure standards for phosphine should be lowered, as a first step, registrants have submitted a science-based literature assessment to EPA for review.

If after review of this assessment, EPA determines that the current exposure level of 0.3 ppm is not adequate, EPA may require further data. The registrants commit, as a term and condition of registration, to submit protocols for any additional studies identified as necessary by EPA within 6 months of receipt of a letter by EPA describing its rationale for requiring additional studies. Prior to issuing such a letter, EPA will first provide registrants with the opportunity to meet with the Agency to discuss the Agency's assessment and preliminary findings and additional data requirements. EPA will also issue a section 3(c)(2)(B) data call-in for all such studies if they are required. EPA notes that, if after review of the studies that are submitted, any actions required to reduce the exposure level will include an opportunity for comment and/or input.

E. Training & Certification

The signatory registrants agree to work with the representatives of EPA, USDA, academia, the states and the user community in development of training modules and validated certification examination questions that can be used by the states in their Certification and Training programs. Using the interim fumigation management plan guidance developed in Section A above as a beginning point, the registrants also agree to produce more detailed guidance to assist users in developing site-specific fumigation management plans, incorporate this guidance as part of training modules for certification and training activities, and provide amended or supplemental labeling to the EPA reflecting this detailed guidance. Examples of the types of materials to be developed by the registrants are described in Appendix C.

F. Conditions of Registration

Each term of this Agreement expressed in paragraphs A through E above shall be incorporated as a term and condition of registration of each phosphine based fumigant registered by each of the signatory registrants upon signature of this Memorandum of Agreement. Each registrant agrees that failure to comply with any of the conditions of registration set forth in paragraphs A through E above shall be grounds for cancellation of the affected registration(s) under FIFRA section 6(e).

G. Effective Date

This Agreement shall become effective between EPA and each signatory registrant upon signature by the Director of the Special Review and Reregistration Division, Office of Pesticide Programs.

WE AGREE TO THIS:

_____ _____
Date

U.S. Environmental Protection Agency

_____ _____
Date

Authorized Agent, Bernardo Chemicals, Inc.

_____ _____
Date

Authorized Agent, Cytec Industries, Inc.

_____ _____
Date

Authorized Agent, D&D Holdings, Inc.

_____ _____

Authorized Agent, Inventa Corporation Date

_____ _____

Authorized Agent, Midland Fumigant, Inc. Date

APPENDIX A: LIST OF REGISTRATIONS SUBJECT TO MEMORANDUM OF AGREEMENT, BY REGISTRANT

Bernardo Chemicals, Inc.
P.O. Box 1632
Turlock, CA 95381

Cytec Industries, Inc.
Five Garret Mountain Plaza
West Patterson, NJ 07424

D&D Holdings, Inc.
153 Triangle Drive
P.O. Box 116
Weyers Cave, VA 24486

Inventa Corporation
740 Springdale Drive; Suite 204
P.O. Box 570
Exton, PA 19341

Midland Fumigant, Inc.
1805 S. 2nd Street
P.O. Box 627
Leavenworth, KS 66048

APPENDIX B: LABEL REVISIONS

The following language is to be included on all phosphine product labels and/or applicator's manuals. Any proposed deviation from the label language in this appendix must be explained in a cover letter accompanying the label amendment submission.

"Prior to fumigation, review the MSDS, Applicator's Manual and safety information with appropriate company employees."

"On an annual basis, or more frequently if required by the Fumigation Management Plan, provide and review with local emergency planning committee officials (as defined by EPCRA section 301(c)) the MSDS, Applicator's Manual, and other relevant safety information, if available, for use in the event of an emergency."

"These products may be sold only to persons who hold a dealer or certified applicators license. These products may be used only by those persons who hold a certified applicator license or trained persons under the direct supervision of a certified applicator. There must be at least one certified applicator physically present and responsible for each fumigation. The certified applicator must maintain visual and/or voice contact with all fumigation workers during the application of the fumigants."

"… the aeration of railcars, railroad boxcars, containers and other vehicles is prohibited en-route."

"Written notification must be provided to the receiver of railcars, railroad boxcars, shipping containers and other vehicles, which 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 proceed or accompany all transportation containers or vehicles. Proper handling of treated railcars at their destination is the responsibility of the consignee. The consignee must be familiar with the properties of hydrogen phosphide fumigants, worker exposure limits and symptoms and first aid treatment for hydrogen phosphide poisoning and must know how to make gas concentration measurements. 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."

"signs made of substantial material that can be expected to withstand adverse weather conditions."

- ✓ "The date and time fumigation begins and is completed.
- ✓ "Name of fumigant used."
- ✓ "Name, address and telephone number of the fumigation company and/or applicator"
- ✓ "A 24-hour emergency response telephone number"

"All incidents must be reported as per requirements of OSHA CFR 29."

"Report all thefts of product immediately to proper local officials"

"Registrant must be informed of any incident involving the use of this product. Please call (add phone number here of 6(a)2 compliance officer)".

"NIOSH/MSHA approved respiratory protection must be worn if worker exposure limits cannot be met through engineering controls and/or appropriate worker practices"

"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 wearing the proper safety equipment, when a structure that is under fumigation is to be entered."

"Fumigation Management Plan"

"The certified applicator is responsible for the development and maintenance of a Fumigation Management Plan (FMP) for each site at which a fumigation is to take place. The certified applicator must work with the owners and/or responsible employees of the site to be fumigated in the development of the plan. A FMP is intended to ensure a safe and effective fumigation. A FMP must address characterization of the site, and include appropriate monitoring and notification requirements, consistent with the following guidelines:

1. Inspect the site to determine its suitability for fumigation.
2. When sealing is required, consult previous records for any changes to the structure, seal leaks, and monitor any occupied adjacent buildings to ensure safety.
3. Prior to each fumigation, review any existing FMP, MSDS, Applicators Manual and other relevant safety procedures with company officials and appropriate employees.
4. Consult company officials in the development of procedures and appropriate safety measures for nearby workers that will be in and around the area during application and aeration.
5. Consult with company officials to develop an appropriate monitoring plan that will confirm that nearby workers and bystanders are not exposed to levels above the allowed limits during application/aeration. This plan must also demonstrate that nearby residents will not be

exposed to concentrations above the allowable limits.

6. Consult with company officials to develop procedures for local authorities to notify of nearby residents in the event of an emergency.
7. Confirm the placement of placards to secure entrance into any area under fumigation.
8. Confirm the required safety equipment is in place and the necessary manpower is available to complete a safe effective fumigation.

These guidelines provide an outline of the factors that must be considered in putting a FMP together. It is important to note that some plans will be more comprehensive than others. All FMPs should reflect the experience and expertise of the applicator and circumstances at and around the site.

In addition to a FMP, the applicator must read the entire label and follow its direction carefully. If the applicator has any questions about the development of a FMP contact (company name) for further assistance.

FMP's and related documentation, including monitoring records, must be maintained for a minimum of 2 years by the certified applicator."

"If an area is to be entered after fumigation, it must be aerated until the level of gas is at or below the permissible levels. The area or site must be monitored to ensure that liberation of gas from the treated commodity does not result in the development of unacceptable levels of hydrogen phosphide. Reentry into treated areas by any person before this time unless protected by an approved respirator is prohibited."

"The site to be fumigated must first be inspected to determine if it can be made sufficiently gas tight."

"Careful sealing is required to ensure that adequate gas levels are retained and proper application procedures must be followed to provide satisfactory distribution of hydrogen phosphine gas."

"Document any burrows that open under or into occupied buildings."

" This product must not be applied into a burrow system that is within15 feet 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."

"Prior to treating a rodent burrow on a property containing an inhabited structure, the applicant must provide the customer with a MSDS or appropriate sections of the Applicator's Manual."

"A Fumigation Management Plan must be developed to provide for safe and efficient application of the fumigant to include emergency procedures, where required, and to decide how monitoring needs to be conducted to prevent excessive exposures."

"Persons working with aluminum phosphide must be knowledgeable of the hazards of this chemical and trained in the use of required respiratory equipment and detector devices, emergency procedures, and use of the fumigant."

"Hydrogen phosphide exposures must be documented in an operations log or manual for each site and operation where exposures may occur."

"This monitoring is mandatory."

" Once exposures have been adequately characterized spot checks must be made, especially if conditions change significantly or if an unexpected garlic odor is detected."

"If monitoring shows that workers could be exposed to concentrations in excess of the permitted limits, then engineering controls and/or appropriate work practices must be used to reduce exposure to within permitted limits."

APPENDIX C: TRAINING & CERTIFICATION

Registrants agree to work with representatives of EPA, USDA, the states and the user community to develop training modules to be used by the states in their certified applicator programs. This work will include, but not necessarily be limited to a good faith effort to provide:

A. Access to experts to participate in an advisory committee.

B. Access to facilities, materials and support for fumigation demonstrations and for development of audio-visual training materials if determined to be needed by the Agency.

C. Timely review on all draft training materials and related documents.

Registrants also agree to provide support for the development of test questions, tests or exams for use as part of certification and training programs. This project will be led by the Agency but will include USDA, state lead agency, and user community input. This support shall include, but not necessarily be limited to a good faith effort to provide:

D. Access to experts to participate on an advisory committee.

E. Access to facilities, materials and support for fumigation demonstrations.

F. Timely review of all exam materials and related documents.

The registrants agree to provide a one-time financial contribution of up to, but not exceeding, $20,000 to assist in the completion of training and certification activities outlined in this agreement. This total is for all of the registrants together, not for each of them individually. EPA will consult with the registrants prior to disbursing these funds.

APPENDIX D: CURRENT REGISTRATIONS THAT ARE SUBJECT TO THIS AGREEMENT

30574-1
30574-4
30574-5
30574-6
30574-7
30574-8
30574-9
30574-10
30574-11
43743-1
43743-2
43743-3
59209-1
59209-2
59209-3
59209-4
59209-6
68387-7
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