Appendix C
ECOTOX Open Literature Bibliography

Explanation of OPP Acceptability Criteria and Rejection Codes for ECOTOX Data Studies located and coded into ECOTOX must meet acceptability criteria, as established in the Interim Guidance of the Evaluation Criteria for Ecological Toxicity Data in the Open Literature, Phase I and II, Office of Pesticide Programs, U.S. Environmental Protection Agency, July 16, 2004. Studies that do not meet these criteria are designated in the bibliography as "Accepted for ECOTOX but not OPP." The intent of the acceptability criteria is to ensure data quality and verifiability. The criteria parallel criteria used in evaluating registrant-submitted studies. Specific criteria are listed below, along with the corresponding rejection code.

- The paper does not report toxicology information for a chemical of concern to OPP; (Rejection Code: NO COC)
- The article is not published in English language; (Rejection Code: NO FOREIGN)
- The study is not presented as a full article. Abstracts will not be considered; (Rejection Code: NO ABSTRACT)
- The paper is not publicly available document; (Rejection Code: NO NOT PUBLIC (typically not used, as any paper acquired from the ECOTOX holding or through the literature search is considered public)
- The paper is not the primary source of the data; (Rejection Code: NO REVIEW)
- The paper does not report that treatment(s) were compared to an acceptable control; (Rejection Code: NO CONTROL)
- The paper does not report an explicit duration of exposure; (Rejection Code: NO DURATION)
- The paper does not report a concurrent environmental chemical concentration/dose or application rate; (Rejection Code: NO CONC)
- The paper does not report the location of the study (e.g., laboratory vs. field); (Rejection Code: NO LOCATION)
- The paper does not report a biological effect on live, whole organisms; (Rejection Code: NO IN-VITRO)
- The paper does not report the species that was tested; and this species can be verified in a reliable source; (Rejection Code: NO SPECIES)
- The paper does not report effects associated with exposure to a single chemical. (Rejection Code: NO MIXTURE). It should be noted that all papers including data on pesticide mixtures are considered.

Additionally, efficacy studies on target species are excluded and coded as NO TARGET.

Data that originated from the OPP Pesticide Ecotoxicity Database is coded as NO EFED. These data are already available to the chemical team.

ZINC PHOSPHIDE
Papers that Were Accepted for ECOTOX

ECOTOX and EFED

1. Ahmad, N. and Parshad, V. R. (1991). **Evaluation of Rodenticidal Baits in Fields of Sugarcane (Saccharum officinarum).** *Indian J.Agric.Sci.* 61: 281-284; Habitat: T; Effect Codes: POP.

2. Ahmad, N., SHEIKHER, C., and Guraya, S. S. (1989). **Rodenticidal Baitings in Wheat Fields of the Garhwal Himalayas.** *Trop.Pest Manag.* 35: 282-285; Habitat: T; Effect Codes: POP.

3. Apa, A. D., Uresk, D. W., and Linder, R. L. (1990). **Black-Tailed Prairie Dog Populations One Year After Treatment with Rodenticides.** *Great Basin Nat.* 50: 107-113; Habitat: T; Effect Codes: BEH.

4. Apa, A. D., Uresk, D. W., and Linder, R. L. (1991). **Impacts of Black-Tailed Prairie Dog Rodenticides on Nontarget Passerines.** *Great Basin Nat.* 51: 301-309; Habitat: T; Effect Codes: POP.

5. Bai, K. M. and Majumder, S. K. (1982). **Enhancement of Mammalian Safety by Incorporation of Antimony Potassium Tartrate in Zinc Phosphide Baits.** *Bull.Environ.Contam.Toxicol.* 29: 107-114; Habitat: T

6. Byers, R. E. and Carbaugh, D. H. (1987). **Efficacy of Rodenticides for Control of Orchard Voles.** *J.Am.Soc.Hortic.Sci.* 112: 267-272; Habitat: T; Effect Codes: POP,BEH.

7. Byers, R. E. and Carbaugh, D. H. (1991). **Rodenticides for the Control of Pine and Meadow Voles in Orchards.** *J.Environ.Hortic.* 9: 167-172; Habitat: T; Effect Codes: BEH,MOR,POP.

8. Byers, R. E. and Carbaugh, D. H. (1989). **Vole Population Shifts Related to Rodenticide Usage.** *Hortscience* 24: 783-785; Habitat: T; Effect Codes: POP.

9. Cincotta, R. P., Uresk, D. W., and Hansen, R. M. (1987). **Demography of Black-Tailed Prairie Dog Populations Reoccupying Sites Treated with Rodenticide.** *Great Basin Nat.* 47: 339-343; Habitat: T; Effect Codes: POP.

10. Deisch, M. S., Uresk, D. W., and Linder, R. L. (1990). **Effects of Prairie Dog Rodenticides on Deer Mice in Western South Dakota.** *Great Basin Nat.* 50: 347-353; Habitat: T; Effect Codes: POP.

11. Dubey, O. P., Awasthi, A. K., and Patel, R. K. (1993). **Damage of Wheat (Triticum aestivum) Tillers by Field Rats (Bandicota bengalensis, Rattus rattus, Millardia**

meltada) and Their Control with Rodenticide Baits. *Indian J.Agric.Sci.* 63: 127-129; Habitat : T; Effect Codes: POP.

12. Fellows, D. P., Pank, L. F., and Engeman, R. M. (1988). **Hazards to Birds from Zinc Phosphide Rat Bait in a Macadamia Orchard.** *Wildl.Soc.Bull.* 16: 411-416; Habitat: T; Effect Codes: POP,MOR.

13. Gill, J. E. and Redfern, R. (1983). **Laboratory Tests of Seven Rodenticides for the Control of Meriones shawi.** *J.Hyg.,Camb.* 91: 351-357; Habitat: T; Effect Codes: MOR.

14. Gill, J. E. and Redfern, R. (1980). **Laboratory Trials of Seven Rodenticides for Use Against the Cotton Rat (Sigmodon hispidus).** *J.Hyg.* 85: 443-450; Habitat: T; Effect Codes: BEH,MOR.

15. Glahn, J. F. and Lamper, L. D. (1983). **Hazards to Geese from Exposure to Zinc Phosphide Rodenticide Baits.** *Calif.Fish Game* 69: 105-114; Habitat: T; Effect Codes: PHY,GRO,MOR,BEH,ACC.

16. Hill, E. F. and Carpenter, J. W. (1982). **Responses of Siberian Ferrets to Secondary Zinc Phosphide Poisoning.** *J.Wildl.Manag.* 46: 678-685; Habitat: T; Effect Codes: BEH,GRO.

17. Hill, E. F., Heath, R. G., Spann, J. W., and Williams, J. D. (1975). **Lethal Dietary Toxicities of Environmental Pollutants to Birds.** *U.S.Fish and Wildlife Service, Special Scientific Report-Wildlife* 191: 1-61; Habitat: T; Effect Codes: MOR.

18. Hines, T. and Dimmick, R. W. (1971). **The Acceptance by Bobwhite Quail of Rodent Baits Dyed and Treated with Zinc Phosphide.** *Proc.Ann.Conf.S.E.Assoc.Game Fish Comm.* 24: 201-205; Habitat: T

19. Krishnakumari, M. K., Bai, K. M., and Majumder, S. K. (1980). **Toxicity and Rodenticidal Potency of Zinc Phosphide.** *Bull.Environ.Contam.Toxicol.* 25: 153-159; Habitat: T; Effect Codes: MOR,GRO.

20. Lam, Y. M. (1990). **Evaluation of Four Rodenticidal Dust for the Control of Rattus argentiventer in Rice Fields.** *MARDI (Malays.Agric.Res.Dev.Inst.)Res.J.* 18: 185-189; Habitat : T; Effect Codes: POP.

21. Malhi, C. S. and Parshad, V. R. (1995). **Comparative Efficacy of Three Rodenticides with Different Baiting Methods in Wheat and Rice Crops.** *Int.Pest Control* 37: 55-57; Habitat: T; Effect Codes: POP,PHY.

22. Merson, M. H. and Byers, R. E. (1985). **Weathering and the Field Efficacy of Pelletized Rodenticide Baits in Orchards.** *Crop Prot.* 4: 511-519; Habitat: T; Effect Codes: POP,MOR,BEH.

23. Moran, S. (1991). **Toxicity of Sodium Fluoroacetate and Zinc Phosphide Wheat Grain Baits to Microtus guentheri and Meriones tristrami.** *Bull.OEPP/EPPO* 21: 73-80;

Habitat: T; Effect Codes: MOR.

24. Parshad, V. R. and Kochar, J. K. (1995). **Potential of Three Rodenticides to Induce Conditioned Aversion to Their Baits in the Indian Mole Rat, Bandicota bengalensis.** *Appl.Anim.Behav.Sci.* 45: 267-276; Habitat: T; Effect Codes: BEH.

25. Ramey, C. A. and Sterner, R. T. (1995). **Mortality of Gallinaceous Birds Associated with 2 Percent Zinc Phosphide Baits for Control of Voles in Alfalfa.** *Int.Biodeterior.Biodegrad.* 36: 51-64; Habitat: T; Effect Codes: MOR.

26. Shivanandappa, T., Ramesh, H. P., and Krishnakumari, M. K. (1979). **Rodenticidal Poisoning of Non-Target Animals: Acute Oral Toxicity of Zinc Phosphide to Poultry.** *Bull.Environ.Contam.Toxicol.* 23: 452-455; Habitat: T; Effect Codes: MOR,GRO.

27. Singh, R. and Saxena, Y. (1991). **The Phenomenon of Bait Shyness in Black Rat, Rattus rattus rufescens (Gray).** *Pak.J.Zool.* 23: 65-68; Habitat: T; Effect Codes: BEH.

28. Sterner, R. T. and Mauldin, R. E. (1995). **Regressors of Whole-Carcass Zinc Phosphide/Phosphine Residues in Voles: Indirect Evidence of Low Hazards to Predators/Scavengers.** *Arch.Environ.Contam.Toxicol.* 28: 519-523; Habitat: T; Effect Codes: BEH,ACC,MOR,GRO.

29. Tietjen, H. P. (1976). **Zinc Phosphide - Its Development as a Control Agent for Black-Tailed Prairie Dogs.** *Special Scientific Report #195, U.S.Fish and Wildlife Service, Denver Wildlife Research Center.Denver, CO* 14 p.; Habitat: T; Effect Codes: MOR,ACC.

30. Tkadlec, E. (1990). **Optimum Concentration of Zinc Phosphide in Rodenticidal Baits Against the Common Vole (Microtus arvalis).** *Folia Zool.* 39: 227-236; Habitat: T; Effect Codes: MOR,BEH.

ECOTOX only

1. Ahmad, N., SHEIKHER, C., and Guraya, S. S. (1988). **Evaluation of Weather-Proof Baits for the Control of Field Rodents in Rainy Season.** *Indian J.Agric.Sci.* 58: 297-298; Habitat: T; Effect Codes: MOR.

2. Arjo, W. M. and Nolte, D. L. (2004). **Assessing the Efficacy of Registered Underground Baiting Products for Mountain Beaver (Aplodontia rufa) Control.** *Crop Prot.* 23: 425-430; Habitat: T; Effect Codes: MOR.

3. Arora, K. K., Pahwa, R., Lal, S., Srivastava, J. L., and Kumar, A. (1987). **Rodent Control in Commercial Grain Warehouses in India.** *Pesticides (Bombay)* 21: 12-13; Habitat: T; Effect Codes: MOR.

4. Baskaran, J., Kanakasabai, R., and Neelanarayanan, P. (1995). **Evaluation of Two Rodenticides in the Paddy Fields During Samba and Thaladi Seasons.** *J.Exp.Biol.* 33: 113-121; Habitat: T; Effect Codes: POP.

5. Bell, H. B. and Dimmik, R. W. (1975). **Hazards to Predators Feeding on Prairie Voles Killed with Zinc Phosphide.** *J.Wildl.Manag.* 39: 816-819; Habitat: T; Effect Codes: MOR,BEH.

6. Bhatnagar, R. K., Palta, R. K., Bhandari, J. K., and Saxena, P. N. (1991). **Responses in Nesokia indica Gray to Zinc Phosphide Baits.** *J.Entomol.Res.(New Delhi)* 15: 149-150; Habitat: T; Effect Codes: BEH,MOR.

7. Bradfield, A. A. G. and Gill, J. E. (1984). **Laboratory Trials of Five Rodenticides for the Control of Mesocricetus auratus Waterhouse.** *J.Hyg.* 93: 389-394; Habitat: T; Effect Codes: MOR.

8. Byers, R. E. and Carbaugh, D. H. (1987). **Bait Shyness of Pine Voles to Zinc Phosphide and Anticoagulants Stored with Pesticides.** *Hortscience* 22: 239-241; Habitat: T; Effect Codes: MOR,BEH.

9. Garg, S. K., Singh, H., Ram, H., and Chandna, S. S. (1984). **Aldicarb (Temika) and Carbofuran (Furadan) Granules as Rodenticides.** *Agric.Sci.Dig.* 4: 99-101; Habitat: T

10. Gill, J. E. and Redfern, R. (1979). **Laboratory Tests of Seven Rodenticides for the Control of Mastomys natalensis.** *J.Hyg.* 83: 345-352; Habitat: T; Effect Codes: MOR.

11. Hunt, E. G. and Keith, J. O. (1962). **Pesticide-Wildlife Investigations in California - 1962.** *Proc.2nd Annual Conf.on the Use of Agricultural Chemicals in California - A Summary of the Problems and Progress in Solving Them, University of California, Davis, CA* 29 p.; Habitat: AT; Effect Codes: POP,MOR,ACC.

12. Hurley, S. and Fenton, M. B. (1980). **Ineffectiveness of Fenthion, Zinc Phosphide, DDT and Two Ultrasonic Rodent Repellers for Control of Populations of Little Brown Bats (Myotis lucifugus).** *Bull.Environ.Contam.Toxicol.* 25: 503-507; Habitat: T; Effect Codes: MOR,PHY.

13. Khan, A. A. (1981). **Field Trial of Some Rodenticides Against the Collared Pika, Ochotona rufescens in Apple Orchard.** *Int.Pest Control* 12-13; Habitat: T; Effect Codes: BEH.

14. Khan, A. A. and Ahmad, M. (1991). **Field Efficacy of the Second Generation Anticoagulants, Zinc Phosphide and Bromethalin Against Meriones hurrianae Jerdon.** *Indian J.Plant Prot.* 19: 43-48; Habitat: T; Effect Codes: BEH,MOR,POP.

15. Khokhar, A. R., PERVEZ, A., Rizvi, S. W. A., and Ismail, S. (1999). **Rodent Infestation and Its Control in a Plantation Forest at Pasni, Balochistan.** *Pak.J.Zool.* 31: 65-69; Habitat: T; Effect Codes: PHY,POP,BEH.

16. Kumar, P., Pasahan, S. C., Sabhlok, V. P., and Singal, R. K. (1997). **Efficacy and Economics of Rodenticides for Rodent Management in Watermelon (Citrullus lanatus) Fields.** *Indian J.Agric.Sci.* 67: 528-530; Habitat: T; Effect Codes: POP,MOR,PHY.

17. Malhi, C. S., Chopra, G., and Parshad, V. R. (1986). **Poison Baiting of Rodents in Wheat Triticum aestivum.** *Indian J.Agric.Sci.* 56: 609-611; Habitat: T; Effect Codes: POP.

18. Matschke, G. H., Fagerstone, K. A., Halstead, N. D., Lavoie, G. K., and Otis, D. L. (1982). **Population Reduction of Richardson's Ground Squirrels with Zinc Phosphide.** *J.Wildl.Manag.* 46: 671-677; Habitat: T; Effect Codes: POP.

19. Office of Pesticide Programs (2000). **Pesticide Ecotoxicity Database (Formerly: Environmental Effects Database (EEDB)).** *Environmental Fate and Effects Division, U.S.EPA, Washington, D.C.*; Habitat: AT; Effect Codes: MOR,POP,PHY,GRO,REP.

20. Parshad, V. R., Ahmad, N., and Chopra, G. (1987). **Deterioration of Poultry Farm Environment by Commensal Rodents and Their Control.** *Int.Biodeterior.* 23: 29-46; Habitat: T; Effect Codes: BEH,MOR.

21. PERVEZ, A., Ahmed, S. M., Ahmad, S., and Ali Rizvi, S. W. (1999). **The Significance of Additives to Enhance Poison Bait Acceptance Against Rodents Damaging Paddy in Lower Sindh, Pakistan.** *Pak.J.Zool.* 31: 207-210; Habitat: T; Effect Codes: BEH,PHY.

22. Poche, R. M. and Mian, M. Y. (1986). **Effectiveness of Four Rodenticides in Deepwater Rice.** *Z.Angew.Zool.* 73: 37-48; Habitat: T; Effect Codes: POP.

23. Proulx, G. (1998). **Evaluation of Strychnine and Zinc Phosphide Baits to Control Northern Pocket Gophers (Thomomys talpoides) in Alfalfa Fields in Alberta, Canada.** *Crop Prot.* 17: 135-138; Habitat: T; Effect Codes : POP.

24. Ramesh, P. (1987). **Two Baiting Methods for Nesokia indica Gray, Their Relative Efficacy and Economics.** *Indian J.Plant Prot.* 15: 174-175; Habitat: T; Effect Codes: MOR.

25. Ramey, C. A., Bourassa, J. B., and Brooks, J. E. (2000). **Potential Risks to Ring-Necked Pheasants in California Agricultural Areas Using Zinc Phosphide.** *Int.Biodeterior.Biodegrad.* 45: 223-230; Habitat: T; Effect Codes: MOR.

26. Sabhlok, V. P., Pasahan, S. C., Kumar, P., and Singal, R. K. (1997). **Evaluation of Different Rodenticidal Baits Against Rodent Population in Cucumber (Cucumis sativus) Crop Fields.** *Indian J.Exp.Biol.* 35: 670-672; Habitat: T; Effect Codes: MOR,PHY,POP.

27. Schafer, E. W. and Bowles, W. A. (1985). **Acute Oral Toxicity and Repellency of 933 Chemicals to House and Deer Mice.** *Arch.Environ.Contam.Toxicol.* 14: 111-129; Habitat: T; Effect Codes: MOR.

28. Schitoskey, F. Jr. (1975). **Primary and Secondary Hazards of Three Rodenticides to Kit Fox.** *J.Wildl.Manag.* 39: 416-418; Habitat: T; Effect Codes: MOR.

29. SHEIKHER, C. and Jain, S. D. (1996). **Mode of Application and Performance of**

Rodenticides in Vegetable Crops. *Indian J.Agric.Sci.* 66: 437-440; Habitat: T; Effect Codes: POP.

30. SHEIKHER, C. and Jain, S. D. (1997). **Rodents in Cauliflower and Cabbage: Population, Damage and Control.** *Int.J.Pest Manag.* 43: 63-69; Habitat: T; Effect Codes: POP.

31. Shumake, S. A., Hakim, A. A., and Gaddis, S. E. (2002). **Carbon Disulfide Effects on Pre-baited vs. Non-pre-baited Rats Exposed to Low Dosage Zinc Phosphide Rodenticide Bait.** *Crop Prot.* 21: 545-550; Habitat: T; Effect Codes: BEH,MOR.

32. Sterner, R. T., Goldade, D. A., and Mauldin, R. E. (1998). **Zinc Phosphide Residues in Gray-Tailed Voles (Microtus canicaudus) Fed Fixed Particles of a 2% Grain Bait.** *Int.Biodeterior.Biodegrad.* 42: 109-113; Habitat: T; Effect Codes: GRO,ACC,MOR.

33. Sterner, R. T., Ramey, C. A., Edge, W. D., Manning, T., Wolff, J. O., and Fagerstone, K. A. (1996). **Efficacy of Zinc Phosphide Baits to Control Voles in Alfalfa - An Enclosure Study.** *Crop Prot.* 15: 727-734; Habitat: T; Effect Codes: POP.

34. Sterner, Ray T. and Ramey, C. A. (2002). **An Index Technique to Monitor Broadcast Calibration and Bait pick up, plus Rodent and Avian Sign Under Arid Conditions.** *Pest Manag.Sci.* 58: 385-391; Habitat: T; Effect Codes: POP,BEH.

35. Tkadlec, E. and Gattermann, R. (1993). **Circadian Changes in Susceptibility of Voles and Golden Hamsters to Acute Rodenticides.** *J.Interdisciplinary Cycle Res.* 24: 153-161; Habitat: T; Effect Codes: MOR.

Acceptable for ECOTOX and OPP

1. Ahmad, N. and Parshad, V. R. (1991). **Evaluation of Rodenticidal Baits in Fields of Sugarcane (Saccharum officinarum).** *Indian J.Agric.Sci.* 61: 281-284.

   EcoReference No.: 75653
   Chemical of Concern: ZnP,BDF,BDL; Habitat: T; Effect Codes: POP; Rejection Code: LITE EVAL CODED(ZnP,BDF,BDL).

2. Ahmad, N., SHEIKHER, C., and Guraya, S. S. (1989). **Rodenticidal Baitings in Wheat Fields of the Garhwal Himalayas.** *Trop.Pest Manag.* 35: 282-285.

   EcoReference No.: 75606
   Chemical of Concern: ZnP,BDF,BDL; Habitat: T; Effect Codes: POP; Rejection Code: LITE EVAL CODED(ZnP,BDF,BDL).

3. Apa, A. D., Uresk, D. W., and Linder, R. L. (1990). **Black-Tailed Prairie Dog Populations One Year After Treatment with Rodenticides.** *Great Basin Nat.* 50: 107-113.

   EcoReference No.: 75416
   Chemical of Concern: ZnP,STCH; Habitat: T; Effect Codes: BEH; Rejection Code: LITE EVAL CODED(ZnP),OK(STCH).

4. Apa, A. D., Uresk, D. W., and Linder, R. L. (1991). **Impacts of Black-Tailed Prairie Dog Rodenticides on Nontarget Passerines.** *Great Basin Nat.* 51: 301-309.

   EcoReference No.: 75401
   Chemical of Concern: ZnP,STCH; Habitat: T; Effect Codes: POP; Rejection Code: LITE EVAL CODED(ZnP),OK(STCH).

5. Bai, K. M. and Majumder, S. K. (1982). **Enhancement of Mammalian Safety by Incorporation of Antimony Potassium Tartrate in Zinc Phosphide Baits.** *Bull.Environ.Contam.Toxicol.* 29: 107-114.

   EcoReference No.: 47234
   Chemical of Concern: Zn,ZnP; Habitat: T; Rejection Code: TARGET(ZnP).

6. Byers, R. E. and Carbaugh, D. H. (1987). **Efficacy of Rodenticides for Control of Orchard Voles.** *J.Am.Soc.Hortic.Sci.* 112: 267-272.

EcoReference No.: 75393
Chemical of Concern: BDL,BDP,CPC,DPC,CLC,ZnP; Habitat: T; Effect Codes: POP,BEH; Rejection Code: LITE EVAL CODED(BDL,BDP,CPC,DPC,CLC,ZnP).

7. Byers, R. E. and Carbaugh, D. H. (1991). **Rodenticides for the Control of Pine and Meadow Voles in Orchards.** *J.Environ.Hortic.* 9: 167-172.

EcoReference No.: 75474
Chemical of Concern: BDL,DFT,DPC,CPC,CLC,ZnP,OXT; Habitat: T; Effect Codes: BEH,MOR,POP; Rejection Code: LITE EVAL CODED(BDL,DFT,DPC,CPC,CLC,ZnP),OK(OXT).

8. Byers, R. E. and Carbaugh, D. H. (1989). **Vole Population Shifts Related to Rodenticide Usage.** *Hortscience* 24: 783-785.

EcoReference No.: 75463
Chemical of Concern: CPC,ZnP,CLC,BDL; Habitat: T; Effect Codes: POP; Rejection Code: LITE EVAL CODED(CPC,ZnP,CLC,BDL).

9. Cincotta, R. P., Uresk, D. W., and Hansen, R. M. (1987). **Demography of Black-Tailed Prairie Dog Populations Reoccupying Sites Treated with Rodenticide.** *Great Basin Nat.* 47: 339-343.

EcoReference No.: 75420
Chemical of Concern: ZnP; Habitat: T; Effect Codes: POP; Rejection Code: LITE EVAL CODED(ZnP).

10. Deisch, M. S., Uresk, D. W., and Linder, R. L. (1990). **Effects of Prairie Dog Rodenticides on Deer Mice in Western South Dakota.** *Great Basin Nat.* 50: 347-353.

EcoReference No.: 75543
Chemical of Concern: ZnP,STCH; Habitat: T; Effect Codes: POP; Rejection Code: LITE EVAL CODED(ZnP),OK(STCH).

11. Dubey, O. P., Awasthi, A. K., and Patel, R. K. (1993). **Damage of Wheat (Triticum aestivum) Tillers by Field Rats (Bandicota bengalensis, Rattus rattus, Millardia**

meltada) and Their Control with Rodenticide Baits. *Indian J.Agric.Sci.* 63: 127-129.

EcoReference No.: 75466
Chemical of Concern: BDL,ZnP; Habitat: T; Effect Codes: POP; Rejection Code: LITE EVAL CODED(BDL,ZnP).

12. Fellows, D. P., Pank, L. F., and Engeman, R. M. (1988). **Hazards to Birds from Zinc Phosphide Rat Bait in a Macadamia Orchard.** *Wildl.Soc.Bull.* 16: 411-416.

EcoReference No.: 36598
Chemical of Concern: Zn,ZnP; Habitat: T; Effect Codes: POP,MOR; Rejection Code: LITE EVAL CODED(ZnP).

13. Gill, J. E. and Redfern, R. (1983). **Laboratory Tests of Seven Rodenticides for the Control of Meriones shawi.** *J.Hyg.,Camb.* 91: 351-357.

EcoReference No.: 75651
Chemical of Concern: BDF,CLC,BDL,WFN,ZnP; Habitat: T; Effect Codes: MOR; Rejection Code: LITE EVAL CODED(ZnP,CLC,BDF),NO CONTROL(BDL,WFN).

14. Gill, J. E. and Redfern, R. (1980). **Laboratory Trials of Seven Rodenticides for Use Against the Cotton Rat (Sigmodon hispidus).** *J.Hyg.* 85: 443-450.

EcoReference No.: 75709
Chemical of Concern: WFN,BDF,BDL,ZnP; Habitat: T; Effect Codes: BEH,MOR; Rejection Code: LITE EVAL CODED(WFN,BDF,BDL,ZnP).

15. Glahn, J. F. and Lamper, L. D. (1983). **Hazards to Geese from Exposure to Zinc Phosphide Rodenticide Baits.** *Calif.Fish Game* 69: 105-114.

EcoReference No.: 36810
Chemical of Concern: Zn,ZnP; Habitat: T; Effect Codes: PHY,GRO,MOR,BEH,ACC; Rejection Code: LITE EVAL CODED(ZnP).

16. Hill, E. F. and Carpenter, J. W. (1982). **Responses of Siberian Ferrets to Secondary Zinc Phosphide Poisoning.** *J.Wildl.Manag.* 46: 678-685.

EcoReference No.: 37113

Chemical of Concern: Zn,ZnP; Habitat: T; Effect Codes: BEH,GRO; Rejection Code: LITE EVAL CODED(ZnP).

17. Hill, E. F., Heath, R. G., Spann, J. W., and Williams, J. D. (1975). **Lethal Dietary Toxicities of Environmental Pollutants to Birds.** *U.S.Fish and Wildlife Service, Special Scientific Report-Wildlife* 191: 1-61.

EcoReference No.: 35243
Chemical of Concern: 24DXY,ABT,ADC,AMTL,AND,ATZ,Captan,CBF,CBL,Cd,Cr,CYP,DDT,DLD,DMT,DS,DU,ES,ETN,FNT,HCCH,Hg,HPT,MCPB,MLN,MP,MRX,MXC,Naled,Pb,PCB,PCL,PCP,PQT,PRN,PRT,PYN,RSM,RTN,SZ,TFM,THM,TVP,TXP,Zn,ZnP; Habitat: T; Effect Codes: MOR; Rejection Code: LITE EVAL CODED(CBF,ADC,MOM,DMT,SZ,ZnP,RTN),OK(MCPB)//NO RESIDUE(PCB).

18. Hines, T. and Dimmick, R. W. (1971). **The Acceptance by Bobwhite Quail of Rodent Baits Dyed and Treated with Zinc Phosphide.** *Proc.Ann.Conf.S.E.Assoc.Game Fish Comm.* 24: 201-205.

EcoReference No.: 37125
Chemical of Concern: Zn,ZnP; Habitat: T; Rejection Code: LITE EVAL CODED(ZnP).

19. Krishnakumari, M. K., Bai, K. M., and Majumder, S. K. (1980). **Toxicity and Rodenticidal Potency of Zinc Phosphide.** *Bull.Environ.Contam.Toxicol.* 25: 153-159.

EcoReference No.: 51211
Chemical of Concern: Zn,ZnP; Habitat: T; Effect Codes: MOR,GRO; Rejection Code: LITE EVAL CODED(ZnP).

20. Lam, Y. M. (1990). **Evaluation of Four Rodenticidal Dust for the Control of Rattus argentiventer in Rice Fields.** *MARDI (Malays.Agric.Res.Dev.Inst.)Res.J.* 18: 185-189.

EcoReference No.: 75710
Chemical of Concern: WFN,ZNP; Habitat: T; Effect Codes: POP; Rejection Code: LITE EVAL CODED(WFN,ZnP).

21. Malhi, C. S. and Parshad, V. R. (1995). **Comparative Efficacy of Three Rodenticides with Different Baiting Methods in Wheat and Rice Crops.** *Int.Pest Control* 37: 55-57.

EcoReference No.: 75429
Chemical of Concern: BDF,ZnP; Habitat: T; Effect Codes: POP,PHY; Rejection Code: LITE EVAL CODED(ZnP,BDF).

22. Merson, M. H. and Byers, R. E. (1985). **Weathering and the Field Efficacy of Pelletized Rodenticide Baits in Orchards.** *Crop Prot.* 4: 511-519.

EcoReference No.: 75532
Chemical of Concern: PVL,BDF,BDL,DPC,CPC,ZnP; Habitat: T; Effect Codes: POP,MOR,BEH; Rejection Code: LITE EVAL CODED(BDF,BDL,DPC,CPC,ZnP),OK(PVL).

23. Moran, S. (1991). **Toxicity of Sodium Fluoroacetate and Zinc Phosphide Wheat Grain Baits to Microtus guentheri and Meriones tristrami.** *Bull.OEPP/EPPO* 21: 73-80.

EcoReference No.: 75469
Chemical of Concern: NaFA,ZnP,FLAC; Habitat: T; Effect Codes: MOR; Rejection Code: LITE EVAL CODED(ZnP),OK(NaFA),NO ENDPOINT(FLAC).

24. Parshad, V. R. and Kochar, J. K. (1995). **Potential of Three Rodenticides to Induce Conditioned Aversion to Their Baits in the Indian Mole Rat, Bandicota bengalensis.** *Appl.Anim.Behav.Sci.* 45: 267-276.

EcoReference No.: 75654
Chemical of Concern: ZnP,BDF,BDL; Habitat: T; Effect Codes: BEH; Rejection Code: LITE EVAL CODED(BDF),NO ENDPOINT(ZnP,BDL).

25. Ramey, C. A. and Sterner, R. T. (1995). **Mortality of Gallinaceous Birds Associated with 2 Percent Zinc Phosphide Baits for Control of Voles in Alfalfa.** *Int.Biodeterior.Biodegrad.* 36: 51-64.

EcoReference No.: 74983
Chemical of Concern: ZnP; Habitat: T; Effect Codes: MOR; Rejection Code: LITE EVAL CODED(ZnP).

26. Shivanandappa, T., Ramesh, H. P., and Krishnakumari, M. K. (1979). **Rodenticidal Poisoning of Non-Target Animals: Acute Oral Toxicity of Zinc Phosphide to Poultry.** *Bull.Environ.Contam.Toxicol.* 23: 452-455.

EcoReference No.: 38760
Chemical of Concern: Zn,ZnP; Habitat: T; Effect Codes: MOR,GRO; Rejection Code: LITE EVAL CODED(ZnP).

27. Singh, R. and Saxena, Y. (1991). **The Phenomenon of Bait Shyness in Black Rat, Rattus rattus rufescens (Gray).** *Pak.J.Zool.* 23: 65-68.

EcoReference No.: 75538
Chemical of Concern: ZnP; Habitat: T; Effect Codes: BEH; Rejection Code: LITE EVAL CODED(ZnP).

28. Sterner, R. T. and Mauldin, R. E. (1995). **Regressors of Whole-Carcass Zinc Phosphide/Phosphine Residues in Voles: Indirect Evidence of Low Hazards to Predators/Scavengers.** *Arch.Environ.Contam.Toxicol.* 28: 519-523.

EcoReference No.: 40216
Chemical of Concern: Zn,ZnP; Habitat: T; Effect Codes: BEH,ACC,MOR,GRO; Rejection Code: LITE EVAL CODED(ZnP).

29. Tietjen, H. P. (1976). **Zinc Phosphide - Its Development as a Control Agent for Black-Tailed Prairie Dogs.** *Special Scientific Report #195, U.S.Fish and Wildlife Service, Denver Wildlife Research Center.Denver, CO* 14 p.

EcoReference No.: 39116
Chemical of Concern: Zn,ZnP; Habitat: T; Effect Codes: MOR,ACC; Rejection Code: LITE EVAL CODED(ZnP).

30. Tkadlec, E. (1990). **Optimum Concentration of Zinc Phosphide in Rodenticidal Baits Against the Common Vole (Microtus arvalis).** *Folia Zool.* 39: 227-236.

EcoReference No.: 75533
Chemical of Concern: ZnP; Habitat: T; Effect Codes: MOR,BEH; Rejection Code: LITE EVAL CODED(ZnP).

Acceptable for ECOTOX but not OPP

1. Ahmad, N., SHEIKHER, C., and Guraya, S. S. (1988). **Evaluation of Weather-Proof Baits for the Control of Field Rodents in Rainy Season.** *Indian J.Agric.Sci.* 58: 297-298.

   EcoReference No.: 75476
   Chemical of Concern: BDL,ZnP; Habitat: T; Effect Codes: MOR; Rejection Code: NO ENDPOINT(ALL CHEMS).

2. Arjo, W. M. and Nolte, D. L. (2004). **Assessing the Efficacy of Registered Underground Baiting Products for Mountain Beaver (Aplodontia rufa) Control.** *Crop Prot.* 23: 425-430.

   EcoReference No.: 75340
   Chemical of Concern: CPC,ZnP,STCH,DPC; Habitat: T; Effect Codes: MOR; Rejection Code: LITE EVAL CODED(ZnP,CPC),NO ENDPOINT(DPC),OK(STCH).

3. Arora, K. K., Pahwa, R., Lal, S., Srivastava, J. L., and Kumar, A. (1987). **Rodent Control in Commercial Grain Warehouses in India.** *Pesticides (Bombay)* 21: 12-13.

   EcoReference No.: 75502
   Chemical of Concern: WFN,ZnP,AIP; Habitat: T; Effect Codes: MOR; Rejection Code: NO CONTROL,ENDPOINT(ALL CHEMS).

4. Baskaran, J., Kanakasabai, R., and Neelanarayanan, P. (1995). **Evaluation of Two Rodenticides in the Paddy Fields During Samba and Thaladi Seasons.** *J.Exp.Biol.* 33: 113-121.

   EcoReference No.: 40368
   Chemical of Concern: BDL,ZnP; Habitat: T; Effect Codes: POP; Rejection Code: NO ENDPOINT(ALL CHEMS).

5. Bell, H. B. and Dimmik, R. W. (1975). **Hazards to Predators Feeding on Prairie Voles Killed with Zinc Phosphide.** *J.Wildl.Manag.* 39: 816-819.

   EcoReference No.: 35035
   Chemical of Concern: Zn,ZnP; Habitat: T; Effect Codes: MOR,BEH; Rejection Code: NO

ENDPOINT(ZnP).

6. Bhatnagar, R. K., Palta, R. K., Bhandari, J. K., and Saxena, P. N. (1991). **Responses in Nesokia indica Gray to Zinc Phosphide Baits.** *J.Entomol.Res.(New Delhi)* 15: 149-150.

EcoReference No.: 75563
Chemical of Concern: ZnP; Habitat: T; Effect Codes: BEH,MOR; Rejection Code: NO ENDPOINT,CONTROL(ZnP).

7. Bradfield, A. A. G. and Gill, J. E. (1984). **Laboratory Trials of Five Rodenticides for the Control of Mesocricetus auratus Waterhouse.** *J.Hyg.* 93: 389-394.

EcoReference No.: 75610
Chemical of Concern: BDF,ZnP,WFN; Habitat: T; Effect Codes: MOR; Rejection Code: LITE EVAL CODED(ZnP),NO CONTROL(WFN,BDF).

8. Byers, R. E. and Carbaugh, D. H. (1987). **Bait Shyness of Pine Voles to Zinc Phosphide and Anticoagulants Stored with Pesticides.** *Hortscience* 22: 239-241.

EcoReference No.: 75534
Chemical of Concern: BDF,CPC,ZnP; Habitat: T; Effect Codes: MOR,BEH; Rejection Code: LITE EVAL CODED(ZnP),NO ENDPOINT(BDF,CPC).

9. Garg, S. K., Singh, H., Ram, H., and Chandna, S. S. (1984). **Aldicarb (Temika) and Carbofuran (Furadan) Granules as Rodenticides.** *Agric.Sci.Dig.* 4: 99-101.

EcoReference No.: 75400
Chemical of Concern: CBF,ADC,ZnP,AlP; Habitat: T; Rejection Code: NO ENDPOINT(ALL CHEMS).

10. Gill, J. E. and Redfern, R. (1979). **Laboratory Tests of Seven Rodenticides for the Control of Mastomys natalensis.** *J.Hyg.* 83: 345-352.

EcoReference No.: 75717
Chemical of Concern: BDF,CLC,ZnP,BDL,WFN; Habitat: T; Effect Codes: MOR; Rejection Code: NO CONTROL(ALL CHEMS).

11. Hunt, E. G. and Keith, J. O. (1962). **Pesticide-Wildlife Investigations in California - 1962.** *Proc.2nd Annual Conf.on the Use of Agricultural Chemicals in California - A*

Summary of the Problems and Progress in Solving Them, University of California, Davis, CA 29 p.

EcoReference No.: 18105
Chemical of Concern: ZnP,TXP,STCH,EN,DDT,DLD,MLN,NaFA; Habitat: AT; Effect Codes: POP,MOR,ACC; Rejection Code: NO ENDPOINT(DDT,TXP,DLD,PRN,EN,MLN),CONTROL(DDT,TXP,STCH,ZnP,NaFA,PRN,EN),CONC(DDD).

12. Hurley, S. and Fenton, M. B. (1980). **Ineffectiveness of Fenthion, Zinc Phosphide, DDT and Two Ultrasonic Rodent Repellers for Control of Populations of Little Brown Bats (Myotis lucifugus).** *Bull.Environ.Contam.Toxicol.* 25: 503-507.

EcoReference No.: 35261
Chemical of Concern: DDT,Zn,ZnP,FNTH; Habitat: T; Effect Codes: MOR,PHY; Rejection Code: NO ENDPOINT(ALL CHEMS).

13. Khan, A. A. (1981). **Field Trial of Some Rodenticides Against the Collared Pika, Ochotona rufescens in Apple Orchard.** *Int.Pest Control* 12-13.

EcoReference No.: 50926
Chemical of Concern: BDF,ZnP,TI; Habitat: T; Effect Codes: BEH; Rejection Code: NO ENDPOINT(ALL CHEMS).

14. Khan, A. A. and Ahmad, M. (1991). **Field Efficacy of the Second Generation Anticoagulants, Zinc Phosphide and Bromethalin Against Meriones hurrianae Jerdon.** *Indian J.Plant Prot.* 19: 43-48.

EcoReference No.: 75433
Chemical of Concern: BDF,BDL,ZnP,BML; Habitat: T; Effect Codes: BEH,MOR,POP; Rejection Code: NO ENDPOINT(ALL CHEMS).

15. Khokhar, A. R., PERVEZ, A., Rizvi, S. W. A., and Ismail, S. (1999). **Rodent Infestation and Its Control in a Plantation Forest at Pasni, Balochistan.** *Pak.J.Zool.* 31: 65-69.

EcoReference No.: 75436
Chemical of Concern: BDF,ZnP,NaFA; Habitat: T; Effect Codes: PHY,POP,BEH; Rejection Code: NO CONTROL(ALL CHEMS).

16. Kumar, P., Pasahan, S. C., Sabhlok, V. P., and Singal, R. K. (1997). **Efficacy and Economics of Rodenticides for Rodent Management in Watermelon (Citrullus lanatus) Fields.** *Indian J.Agric.Sci.* 67: 528-530.

EcoReference No.: 75507
Chemical of Concern: BDL,ZnP; Habitat: T; Effect Codes: POP,MOR,PHY; Rejection Code: NO CONTROL(ALL CHEMS).

17. Malhi, C. S., Chopra, G., and Parshad, V. R. (1986). **Poison Baiting of Rodents in Wheat Triticum aestivum.** *Indian J.Agric.Sci.* 56: 609-611.

EcoReference No.: 75711
Chemical of Concern: BML,ZnP,BDF; Habitat: T; Effect Codes: POP; Rejection Code: NO ENDPOINT(ALL CHEMS).

18. Matschke, G. H., Fagerstone, K. A., Halstead, N. D., Lavoie, G. K., and Otis, D. L. (1982). **Population Reduction of Richardson's Ground Squirrels with Zinc Phosphide.** *J.Wildl.Manag.* 46: 671-677.

EcoReference No.: 37844
Chemical of Concern: Zn,ZnP; Habitat: T; Effect Codes: POP; Rejection Code: NO ENDPOINT(ZnP).

19. Office of Pesticide Programs (2000). **Pesticide Ecotoxicity Database (Formerly: Environmental Effects Database (EEDB)).** *Environmental Fate and Effects Division, U.S.EPA, Washington, D.C.*

EcoReference No.: 344
Chemical of Concern: 24DXY,ACL,ACP,ACR,AQS,ATZ,AZ,BDF,BMC,BML,BMN,BRSM,BS,BT,Captan,CBF,CBL,CFE,CFE,CLNB,CMPH,CPC,CPY,CTN,CTZ,Cu,CuO,CuS,CYD,CYF,CYP,CYT,DBN,DCNA,DFT,DFZ,DM,DMB,DMM,DMP,DMT,DOD,DPC,DPDP,DS,DSP,DU,DZ,DZM,EFL,EFS,EFV,EP,FHX,FMP,FO,Folpet,FPP,FVL,GYP,HCCH,HXZ,IPD,IZP,LNR,MAL,MB,MBZ,MDT,MFX,MFZ,MGK,MLN,MLT,MOM,MP,MTC,MTL,MTM,NAA,Naled,NFZ,NPP,NTP,OXF,OXT,OYZ,PCZ,PDM,PEB,PHMD,PMR,PMT,PNB,PPB,PPG,PPMH,PQT,PRB,PRT,PSM,PYN,PYZ,RSM,RTN,SMM,SMT,SS,SXD,SZ,TBC,TDC,TDZ,TET,TFN,TFR,TMT,TPR,TRB,WFN,ZnP; Habitat: AT; Effect Codes: MOR,POP,PHY,GRO,REP; Rejection Code: NO EFED (344).

20. Parshad, V. R., Ahmad, N., and Chopra, G. (1987). **Deterioration of Poultry Farm Environment by Commensal Rodents and Their Control.** *Int.Biodeterior.* 23: 29-46.

EcoReference No.: 75546
Chemical of Concern: BDF,ZnP; Habitat: T; Effect Codes: BEH,MOR; Rejection Code: NO CONTROL(ALL CHEMS).

21. PERVEZ, A., Ahmed, S. M., Ahmad, S., and Ali Rizvi, S. W. (1999). **The Significance of Additives to Enhance Poison Bait Acceptance Against Rodents Damaging Paddy in Lower Sindh, Pakistan.** *Pak.J.Zool.* 31: 207-210.

EcoReference No.: 75421
Chemical of Concern: BDF,ZnP,BDL; Habitat: T; Effect Codes: BEH,PHY; Rejection Code: NO ENDPOINT(ALL CHEMS).

22. Poche, R. M. and Mian, M. Y. (1986). **Effectiveness of Four Rodenticides in Deepwater Rice.** *Z.Angew.Zool.* 73: 37-48.

EcoReference No.: 75481
Chemical of Concern: BDF,ZnP; Habitat: T; Effect Codes: POP; Rejection Code: NO ENDPOINT(ALL CHEMS).

23. Proulx, G. (1998). **Evaluation of Strychnine and Zinc Phosphide Baits to Control Northern Pocket Gophers (Thomomys talpoides) in Alfalfa Fields in Alberta, Canada.** *Crop Prot.* 17: 135-138.

EcoReference No.: 75465
Chemical of Concern: ZnP,STCH; Habitat: T; Effect Codes: POP; Rejection Code: NO ENDPOINT(ALL CHEMS).

24. Ramesh, P. (1987). **Two Baiting Methods for Nesokia indica Gray, Their Relative Efficacy and Economics.** *Indian J.Plant Prot.* 15: 174-175.

EcoReference No.: 75477
Chemical of Concern: ZnP; Habitat: T; Effect Codes: MOR; Rejection Code: NO ENDPOINT,CONTROL(ZnP).

25. Ramey, C. A., Bourassa, J. B., and Brooks, J. E. (2000). **Potential Risks to Ring-Necked Pheasants in California Agricultural Areas Using Zinc Phosphide.**

Int.Biodeterior.Biodegrad. 45: 223-230.

EcoReference No.: 75143
Chemical of Concern: ZnP; Habitat: T; Effect Codes: MOR; Rejection Code: NO ENDPOINT(ZnP).

26. Sabhlok, V. P., Pasahan, S. C., Kumar, P., and Singal, R. K. (1997). **Evaluation of Different Rodenticidal Baits Against Rodent Population in Cucumber (Cucumis sativus) Crop Fields.** *Indian J.Exp.Biol.* 35: 670-672.

EcoReference No.: 75484
Chemical of Concern: BDL,ZnP; Habitat: T; Effect Codes: MOR,PHY,POP; Rejection Code: NO CONTROL(ALL CHEMS).

27. Schafer, E. W. and Bowles, W. A. (1985). **Acute Oral Toxicity and Repellency of 933 Chemicals to House and Deer Mice.** *Arch.Environ.Contam.Toxicol.* 14: 111-129.

EcoReference No.: 35426
Chemical of Concern: ADC,CST,MOM,CPC,ZnP,DOD,MLN,Cu,AQS,CuCO,RSM; Habitat: T; Effect Codes: MOR; Rejection Code: NO ENDPOINT(ADC,MOM,CST,ZnP,DMT,CPC,DOD,AQS,CuCO).

28. Schitoskey, F. Jr. (1975). **Primary and Secondary Hazards of Three Rodenticides to Kit Fox.** *J.Wildl.Manag.* 39: 416-418.

EcoReference No.: 35428
Chemical of Concern: ZnP; Habitat: T; Effect Codes: MOR; Rejection Code: NO CONTROL(ZnP).

29. SHEIKHER, C. and Jain, S. D. (1996). **Mode of Application and Performance of Rodenticides in Vegetable Crops.** *Indian J.Agric.Sci.* 66: 437-440.

EcoReference No.: 75720
Chemical of Concern: BDL,ZnP,CLC; Habitat: T; Effect Codes: POP; Rejection Code: NO ENDPOINT(ALL CHEMS).

30. SHEIKHER, C. and Jain, S. D. (1997). **Rodents in Cauliflower and Cabbage: Population, Damage and Control.** *Int.J.Pest Manag.* 43: 63-69.

EcoReference No.: 75408
Chemical of Concern: BDL,ZnP; Habitat: T; Effect Codes: POP; Rejection Code: NO ENDPOINT(ALL CHEMS).

31. Shumake, S. A., Hakim, A. A., and Gaddis, S. E. (2002). **Carbon Disulfide Effects on Pre-baited vs. Non-pre-baited Rats Exposed to Low Dosage Zinc Phosphide Rodenticide Bait.** *Crop Prot.* 21: 545-550.

EcoReference No.: 75542
Chemical of Concern: ZnP; Habitat: T; Effect Codes: BEH,MOR; Rejection Code: NO CONTROL(ZnP).

32. Sterner, R. T., Goldade, D. A., and Mauldin, R. E. (1998). **Zinc Phosphide Residues in Gray-Tailed Voles (Microtus canicaudus) Fed Fixed Particles of a 2% Grain Bait.** *Int.Biodeterior.Biodegrad.* 42: 109-113.

EcoReference No.: 74782
Chemical of Concern: Zn,ZnP; Habitat: T; Effect Codes: GRO,ACC,MOR; Rejection Code: NO ENDPOINT(ZnP).

33. Sterner, R. T., Ramey, C. A., Edge, W. D., Manning, T., Wolff, J. O., and Fagerstone, K. A. (1996). **Efficacy of Zinc Phosphide Baits to Control Voles in Alfalfa - An Enclosure Study.** *Crop Prot.* 15: 727-734.

EcoReference No.: 75461
Chemical of Concern: ZnP; Habitat: T; Effect Codes: POP; Rejection Code: NO ENDPOINT(ZnP).

34. Sterner, Ray T. and Ramey, C. A. (2002). **An Index Technique to Monitor Broadcast Calibration and Bait pick up, plus Rodent and Avian Sign Under Arid Conditions.** *Pest Manag.Sci.* 58: 385-391.

EcoReference No.: 75712
Chemical of Concern: ZnP; Habitat: T; Effect Codes: POP,BEH; Rejection Code: NO ENDPOINT(ZnP).

35. Tkadlec, E. and Gattermann, R. (1993). **Circadian Changes in Susceptibility of Voles and Golden Hamsters to Acute Rodenticides.** *J.Interdisciplinary Cycle Res.* 24: 153-161.

EcoReference No.: 75462
Chemical of Concern: ZnP; Habitat: T; Effect Codes: MOR; Rejection Code: NO ENDPOINT(ZnP).

ZINC PHOSPHIDE
Papers that Were Excluded from ECOTOX

1. Agzamova, G. S. (**Industrial Hygiene In The Production Of Copper Phosphide And Zinc Phosphide.**

   Chem Codes: Chemical of Concern: ZnP Cu; Rejection Code: HUMAN HEALTH.
   copper phosphide/ zinc phosphide/ toxicology/ threshold limit values/ ussr/ animal experiments/ cardiotoxic effects/ haematotoxic effects/ neurotoxic effects/ endocrine effects/ metabolic disturbances/ ilo animal experiments showed that zinc phosphide is a highly toxic chemical (hazard class 2), copper phosphide is of low toxicity (hazard class 4) and the toxic effects of both are moderately cumulative. prolonged inhalation of zinc phosphide and copper phosphide by experimental animals at concentrations of 1mg/m:3: and 8mg/m:3:, respectively, produced abnormalities in lipid and carbohydrate metabolism, as well as disturbances of the blood, nervous, cardiovascular and endocrine systems. maximum allowable concentrations of 0.1mg/m:3: for zinc phosphide and 0.5mg/m:3: (aerosol hazard class 2) for copper phosphide in workplace air are recommended.

2. Amr, M. M., Abbas, E. Z., El-Samra, G. M., Batanuoni, M. El, and Osman, A. M. (**Neuropsychiatric syndromes and occupational exposure to zinc phosphide in Egypt.** 73: 200-206 CODEN: ENVRAL; ISSN: 0013-9351.

   Chem Codes: Chemical of Concern: ZnP CU; Rejection Code: HUMAN HEALTH.
   A total of 86 workers exposed to zinc phosphide (Zn3P2) pesticide were studied for evidence of neuropsychiatric manifestations, as clin. evaluated by electroencephalog. (EEG), and, in some cases, by electromyog. (EMG). All were males (mean age, 35.8 yr; mean duration of exposure to zinc phosphide, 11.3 yr). Most had .gtoreq.1 neuropsychiatric symptoms, including fear of poisoning, anxiety, impotence, and easy fatigue. About half showed evidence of neuropsychiatric signs, including hyperreflexia, polyneuropathy, lumber radiculopathy, and cervical myelopathy, and anxious mood, impaired attention, and psychomotor stimulation. EEG recordings showed abnormal findings in 17.4% of the subjects. The mean age in that group was 39.1 yr; mean duration of exposure to Zn3P2 was 15.1 yr. EMG studies showed evidence of partial denervation of the anterior tibial group of muscles and flexor digiti minimi in 2 of 30 workers (6.7%) who underwent EMG examn. Serum Zn and Ca concns. were significantly higher in exposed workers vs. controls (P <0.005); serum Cu, Fe, P, and Mg were significantly lower in exposed workers vs. controls. Electrophoretic pattern of globulin showed that .gamma.-globulin fraction was significantly increased (P <0.005), and .alpha.2- and .beta.-globulin were decreased (P <0.005) in exposed workers. Lipoprotein pattern showed that total lipids, .beta.-lipoprotein, and .beta.:.alpha. ratio were significantly increased (P <0.005) in exposed workers; the .alpha.1 lipoprotein was decreased. Triglycerides and cholesterol were significantly increased (P <0.001), and phospholipids and phospholipid:cholesterol ratio was significantly decreased (P <0.005) in exposed workers vs. controls. Results indicated that exposure to Zn3P2 caused mild acute and subacute liver cell damage and also affected renal function and perhaps .beta.-cells of the pancreas. A total of 68.6% of exposed workers had chest symptoms; only 24.4% had chest or cardiac signs. Ventilatory functions were abnormal in 70% of exposed workers; abnormal ECG findings were present in 12.8%.

3. ANON (1985). **IMPLICATIONS OF IMPORT AND EXPORT POLICY FOR 1985-1986.** *PESTICIDES (BOMBAY); 19 (9). 1985 (RECD. 1986). 21-23.*

   Chem Codes: Chemical of Concern: DMT,WFN,ZNP; Rejection Code: NO TOX DATA.
   BIOSIS COPYRIGHT: BIOL ABS. RRM PESTICIDE INDUSTRY AGRICHEMICAL SUPPLY INDUSTRY AGRIBUSINESS INDIA Grasses/Growth & Development/ Soil/ Plant Diseases/ Preventive Medicine/ Herbicides/ Pest Control/ Pesticides

4. Arjo, Wendy M. and Nolte, D. L. Dale L. (2004). **Assessing the efficacy of registered underground baiting products for mountain beaver (Aplodontia rufa) control.** *Crop Protection* 23: 425-430.

Chem Codes: Chemical of Concern: ZnP; Rejection Code: INCIDENT.
The mountain beaver (Aplodontia rufa) is a fossorial rodent species endemic to the Pacific Northwest and portions of California. This herbivore inflicts millions of dollars of damage annually to forest seedling plantations. Currently, extensive trapping prior to planting is the most reliable method for reducing damage. With increasing restrictions placed on trapping, forest resource managers need alternative tools to minimize forest damage. This study assessed the potential of four toxicants registered for underground use to control mountain beaver; zinc phosphide, diphacinone, chlorophacinone, and strychnine. Zinc phosphide and strychnine are acute toxicants, whereas diphacinone and chlorophacinone are anticoagulants. Anticoagulants prevent the recycling of vitamin K in the body, which inhibits the production of clotting factors. Efficacy varied among treatments. Zinc phosphide and strychnine were avoided by mountain beaver. Pre-baiting marginally increased acceptance of strychnine, but did not alter mountain beaver acceptance of zinc phosphide. Diphacinone and chlorophacinone were both readily consumed, but only chlorophacinone was 100% effective after a 14-day baiting regime. Subsequently, we tested the effects of diet on the efficacy of diphacinone by varying the availability of food containing vitamin K, the anticoagulant antidote. Restricting access to potential sources of vitamin K appeared to increase efficacy. We conclude that anticoagulants hold some promise as additional tools for managers to reduce mountain beaver populations with chlorophacinone showing the most promise. However, limitations to anticoagulant baits include the necessity of long-term baiting (greater than 10 days), a possible decrease in toxicity if baits contact moisture, and potential primary hazards.

5. Arjo, Wendy M. and Nolte, D. L. Dale L. (2004). **Assessing the efficacy of registered underground baiting products for mountain beaver (Aplodontia rufa) control.** *Crop Protection* 23: 425-430.

Chem Codes: Chemical of Concern: CPC; Rejection Code: INCIDENT.
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6. Arjo, Wendy M. and Nolte, D. L. Dale L. (2004). **Assessing the efficacy of registered underground baiting products for mountain beaver (Aplodontia rufa) control.** *Crop Protection* 23: 425-430.

Chem Codes: Chemical of Concern: CPC; Rejection Code: INCIDENT.
The mountain beaver (Aplodontia rufa) is a fossorial rodent species endemic to the Pacific Northwest and portions of California. This herbivore inflicts millions of dollars of damage annually to forest seedling plantations. Currently, extensive trapping prior to planting is the most reliable method for reducing damage. With increasing restrictions placed on trapping, forest resource managers need alternative tools to minimize forest damage. This study assessed the potential of four toxicants registered for underground use to control mountain beaver; zinc phosphide, diphacinone, chlorophacinone, and strychnine. Zinc phosphide and strychnine are acute toxicants, whereas diphacinone and chlorophacinone are anticoagulants. Anticoagulants prevent the recycling of vitamin K in the body, which inhibits the production of clotting factors. Efficacy varied among treatments. Zinc phosphide and strychnine were avoided by mountain beaver. Pre-baiting

marginally increased acceptance of strychnine, but did not alter mountain beaver acceptance of zinc phosphide. Diphacinone and chlorophacinone were both readily consumed, but only chlorophacinone was 100% effective after a 14-day baiting regime. Subsequently, we tested the effects of diet on the efficacy of diphacinone by varying the availability of food containing vitamin K, the anticoagulant antidote. Restricting access to potential sources of vitamin K appeared to increase efficacy. We conclude that anticoagulants hold some promise as additional tools for managers to reduce mountain beaver populations with chlorophacinone showing the most promise. However, limitations to anticoagulant baits include the necessity of long-term baiting (greater than 10 days), a possible decrease in toxicity if baits contact moisture, and potential primary hazards.

7. Arjo, Wendy M. and Nolte, D. L. Dale L. (2004). **Assessing the efficacy of registered underground baiting products for mountain beaver (Aplodontia rufa) control.** *Crop Protection* 23: 425-430.

   Chem Codes: Chemical of Concern: DPC; Rejection Code: INCIDENT.
   The mountain beaver (Aplodontia rufa) is a fossorial rodent species endemic to the Pacific Northwest and portions of California. This herbivore inflicts millions of dollars of damage annually to forest seedling plantations. Currently, extensive trapping prior to planting is the most reliable method for reducing damage. With increasing restrictions placed on trapping, forest resource managers need alternative tools to minimize forest damage. This study assessed the potential of four toxicants registered for underground use to control mountain beaver; zinc phosphide, diphacinone, chlorophacinone, and strychnine. Zinc phosphide and strychnine are acute toxicants, whereas diphacinone and chlorophacinone are anticoagulants. Anticoagulants prevent the recycling of vitamin K in the body, which inhibits the production of clotting factors. Efficacy varied among treatments. Zinc phosphide and strychnine were avoided by mountain beaver. Pre-baiting marginally increased acceptance of strychnine, but did not alter mountain beaver acceptance of zinc phosphide. Diphacinone and chlorophacinone were both readily consumed, but only chlorophacinone was 100% effective after a 14-day baiting regime. Subsequently, we tested the effects of diet on the efficacy of diphacinone by varying the availability of food containing vitamin K, the anticoagulant antidote. Restricting access to potential sources of vitamin K appeared to increase efficacy. We conclude that anticoagulants hold some promise as additional tools for managers to reduce mountain beaver populations with chlorophacinone showing the most promise. However, limitations to anticoagulant baits include the necessity of long-term baiting (greater than 10 days), a possible decrease in toxicity if baits contact moisture, and potential primary hazards.

8. ASKHAM LR (1985). **MECHANICAL EVALUATION OF THE WEATHERABILITY OF PELLETIZED RODENTICIDES.** *INT PEST CONTROL; 27 (6). 1985 (RECD. 1986). 138-140.*

   Chem Codes: Chemical of Concern: BDF,BDC,DPC,CPC,ZNP; Rejection Code: NO TOX DATA.
   BIOSIS COPYRIGHT: BIOL ABS. RRM BAIT FORMULATION Climate/ Ecology/ Meteorological Factors/ Animals, Wild/ Conservation of Natural Resources/ Ecology/ Biochemistry/ Poisoning/ Animals, Laboratory/ Disinfection/ Pest Control/ Disease Vectors/ Pesticides/ Disease Vectors/ Herbicides/ Pest Control/ Pesticides

9. BERNERS-PRICE SJ and SADLER PJ (1988). **PHOSPHINES AND METAL PHOSPHINE COMPLEXES RELATIONSHIP OF CHEMISTRY TO ANTICANCER AND OTHER BIOLOGICAL ACTIVITY .** *AISEN, P., B. C. ANTANAITIS, S. J. BERNERS-PRICE, K. DOI, H. KOEPF, P. KOEPF-MAIER AND P. J. SADLER. STRUCTURE AND BONDING,* 70. BIOINORGANIC CHEMISTRY. V+194P. SPRINGER-VERLAG: BERLIN, WEST GERMANY; NEW YORK, NEW YORK, USA. ILLUS. ISBN 3-540-50130-4; ISBN 0-387-50130-4.; 0: 27-102.

   Chem Codes: Chemical of Concern: ZNP; Rejection Code: NO TOX DATA.
   BIOSIS COPYRIGHT: BIOL ABS. RRM REVIEW PHOSPHORUS COMPOUNDS ANTIARTHRITIC DRUGS INSECTICIDES MYOCARDIAL IMAGING AGENTS COPPER COMPLEXES GOLD COMPLEXES TECHNETIUM COMPLEXES Isotopes/ Radiation/ Biochemistry/ Minerals/ Inflammation/Pathology/ Therapeutics/ Adipose Tissue/Pathology/ Adipose Tissue/Physiopathology/ Bone Diseases/Pathology/ Bone Diseases/Physiopathology/ Connective Tissue Diseases/Pathology/ Connective Tissue Diseases/Physiopathology/ Fascia/Pathology/ Fascia/Physiopathology/ Joint Diseases/Pathology/ Joint

Diseases/Physiopathology/ Pharmacology/ Cardiovascular Agents/Pharmacology/ Cardiovascular System/Drug Effects/ Connective Tissue/Drug Effects/ Antineoplastic Agents/Pharmacology/ Neoplasms/Therapy/ Herbicides/ Pest Control/ Pesticides/ Arachnida/ Entomology/Economics/ Insecticides/ Pest Control/ Pesticides

10. BRUGGERS RL, GRIFFIN DL, and HAQUE ME (1995). **Analysis of commercially available zinc phosphide from Bangladesh: Implications for rodent control.** *INTERNATIONAL BIODETERIORATION & BIODEGRADATION;* 36: 25-33.

    Chem Codes: Chemical of Concern: ZNP; Rejection Code: NO TOX DATA.
    BIOSIS COPYRIGHT: BIOL ABS. Farmers in Bangladesh seem reluctant to purchase zinc phosphide (Zn3P2) for use in rodent control, primarily because of a concern over the quality of the technical powder available from local distributors. During 1988, packets of Zn3P2 were purchased from the shelves of 23 distributors in Bangladesh and analyzed for technical purity. Only 2 of 23 distributors sold Zn3P2 containing at least 80% (a.i.), while 14 distributors sold material ranging from 15% to nondetectable. Such a lack of quality control is not acceptable if farmers in Bangladesh are to use this material as a primary method of rodent control in agriculture. Animals/ Ecology/ Biochemistry/ Plants/Growth & Development/ Soil/ Herbicides/ Pest Control/ Pesticides/ Plants/ Rodentia

11. BUCKLE AP (1994). **RODENT CONTROL METHODS CHEMICAL.** *BUCKLE, A. P. AND R. H. SMITH (ED.). RODENT PESTS AND THEIR CONTROL. X+405P. CAB INTERNATIONAL: WALLINGFORD, ENGLAND, UK. ISBN 0-85198-820-2.; 0* 127-160.

    Chem Codes: Chemical of Concern: BDF,BDL,DPC,CPC,WFN,ZNP,DFT ; Rejection Code: METHODS.
    BIOSIS COPYRIGHT: BIOL ABS. RRM BOOK CHAPTER RODENTICIDE POISON BAIT ANTICOAGULANT FUMIGANT Animals, Wild/ Conservation of Natural Resources/ Ecology/ Biochemistry/ Poisoning/ Animals, Laboratory/ Herbicides/ Pest Control/ Pesticides/ Mammals/ Rodentia

12. BUCKLE AP (1994). **RODENT CONTROL METHODS CHEMICAL.** *BUCKLE, A. P. AND R. H. SMITH (ED.). RODENT PESTS AND THEIR CONTROL. X+405P. CAB INTERNATIONAL: WALLINGFORD, ENGLAND, UK. ISBN 0-85198-820-2.; 0* 127-160.

    Chem Codes: Chemical of Concern: BDF,BDL,DPC,CPC,WFN,ZNP,DFT ; Rejection Code: METHODS.
    BIOSIS COPYRIGHT: BIOL ABS. RRM BOOK CHAPTER RODENTICIDE POISON BAIT ANTICOAGULANT FUMIGANT Animals, Wild/ Conservation of Natural Resources/ Ecology/ Biochemistry/ Poisoning/ Animals, Laboratory/ Herbicides/ Pest Control/ Pesticides/ Mammals/ Rodentia

13. Burgess, J. L., Morrissey, B., Keifer, M. C., and Robertson, W. O. (**Fumigant-Related Illnesses: Washington State's Five-Year Experience.** *Journal of Toxicology: Clinical Toxicology [J. Toxicol.: Clin. Toxicol.]. Vol. 38, no. 1, pp. 7-14. 2000.*

    Chem Codes: Chemical of Concern: ZNP; Rejection Code: HUMAN HEALTH.
    Objective: Exposure to fumigants may have severe or persistent health effects. Washington State's fumigant-related illnesses were reviewed to better understand the circumstances surrounding exposure and resultant health effects. Methods: Fumigant-related illnesses reported to and investigated by the Washington State Department of Health were reviewed. Illnesses considered by Department of Health to be definitely, probably, or possibly related to pesticide exposure were then analyzed. Results: From 1992-1996, 39 (3.3%) of 1192 definite, probable, or possible cases of pesticide-related illnesses involved exposures to fumigants. Fumigant exposures during this period were to aluminum phosphide (15), methyl bromide (12), metam-sodium (9), and zinc phosphide (3). Symptoms included respiratory problems and eye and/or skin irritation for the majority of exposures, and no deaths were reported. The nature of exposure for these cases included exposure to applicators (17), reentry into a fumigated structure (9), improper storage or disposal (6), reentry into treated agricultural fields (4), drift from treated fields (2), and other (1). Conclusions: Review of fumigant exposures should be used to prevent future events through continued enforcement of established regulations and training of applicators. Classification: X 24134 Pathology; H 5000 Pesticides; P 6000 TOXICOLOGY AND HEALTH Pesticide applications/ Fumigation/ Public health/ Lung diseases/ Irritation/

aluminum phosphide/ methyl bromide/ zinc phosphide/ Pesticides/ Inhalation/ respiratory tract diseases/ USA, Washington/ USA, Washington/ man

14. Casteel, S. W. and Bailey, E. M. Jr (**A review of zinc phosphide poisoning.** *Veterinary and Human Toxicology [VET. HUM. TOXICOL.], vol. 28, no. 2, p. 151, 1986.*

    Chem Codes: Chemical of Concern: ZNP; Rejection Code: HUMAN HEALTH.
    Zinc phosphide has a high nonspecific toxicity and provides cause for concern when widespread field applications are contemplated. Zinc phosphide has caused deaths in many nontarget animal species and in man. Animals have been poisoned by feeding directly on treated bait or on the carcasses of zinc phosphide poisoned rodents. The authors review zinc phosphide poisoning and discuss the toxicity, clinical signs, mechanism of action, physiopathology diagnosis, and treatment. Classification: X 24132 Chronic exposure; P 6000 TOXICOLOGY AND HEALTH; H SE5.26 RODENTICIDES; H SE4.20 POISONS AND POISONING zinc phosphide/ pesticides/ rodenticides/ toxicity/ animals/ clinical aspects/ mechanisms

15. Chopra, G. (1992). **Poultry Farms.** *In: I.Prakash and P.K.Ghosh (Eds.), Rodents in Indian Agriculture, Volume 1, State of the Art, Sci.Publ., Jodhpur, India* 309-330.

    Chem Codes: EcoReference No.: 75529
    Chemical of Concern: BDF,BDL,WFN,ZnP; Rejection Code: REVIEW.

16. Chopra, G. (1992). **Poultry Farms.** *In: I.Prakash and P.K.Ghosh (Eds.), Rodents in Indian Agriculture, Volume 1, State of the Art, Sci.Publ., Jodhpur, India* 309-330.

    Chem Codes: EcoReference No.: 75529
    Chemical of Concern: BDF,BDL,WFN,ZnP; Rejection Code: REVIEW.

17. Collins, A. R., Workman, J. P., and Uresk, D. W. (1984). **An economic analysis of black-tailed prairie dog (Cynomys ludovicianus) control.** *Journal of Range Management [J. RANGE MANAGE.]* 37: 358-361.

    Chem Codes: Chemical of Concern: ZNP; Rejection Code: NO TOX DATA.
    Black-tailed prairie dog (Cynomys ludovicianus) control by poisoning with zinc phosphide was not economically feasible in the Conata Basin of South Dakota. Economic analyses were conducted from U.S. Forest Service and rancher viewpoints. At a prairie dog repopulation rate of 30% per year (the most realistic projection), prairie dog control was not economically feasible and annual maintenance control costs were greater than the annual value of forage gained. Control benefit was forage gained on treated areas. With an increase of approximately 51 kg/ha of cattle forage, over 7 ha of initial prairie dog control were required to gain 1 AUM per year for the life of the treatment. Classification: D 04710 Control Cynomys ludovicianus/ pest control/ range management/ economics/ USA, South Dakota

18. DROLET, R., LAVERTY, S., BRASELTON WE, and LORD, N. (1996). **CASE REPORTS ZINC PHOSPHIDE POISONING IN A HORSE.** *EQUINE VETERINARY JOURNAL;* 28 : 161-162.

    Chem Codes: Chemical of Concern: ZNP; Rejection Code: INCIDENT/SURVEY.
    BIOSIS COPYRIGHT: BIOL ABS. RRM CASE STUDY RODENTICIDE Biochemistry/ Animal/ Toxicology/ Veterinary Medicine/ Animal Diseases/Pathology/ Animal Diseases/Physiopathology/ Herbicides/ Pest Control/ Pesticides/ Perissodactyla

19. Dubey, O. P., Awasthi, A. K., and Patel, R. K. (1992). **Bengal Gram.** *In: I.Prakash and P.K.Ghosh (Eds.), Rodents in Indian Agriculture, Volume 1, State of the Art, Sci.Publ., Jodhpur, India* 269-270.

    Chem Codes: Chemical of Concern: ZnP; Rejection Code: REFS CHECKED/REVIEW.

20. Fiedler, L. A. (1988). **Rodent Pest Problems and Management in Eastern Africa.** *FAO Plant Prot.Bull.* 36: 125-134.

Chem Codes: EcoReference No.: 75721
Chemical of Concern: BDF,Tl,NaFA,ZnP,WFN,CPC,RSG; Rejection Code: REVIEW.

21. Fiedler, L. A. (1988). **Rodent Pest Problems and Management in Eastern Africa.** *FAO Plant Prot.Bull.* 36: 125-134.

Chem Codes: EcoReference No.: 75721
Chemical of Concern: BDF,Tl,NaFA,ZnP,WFN,CPC,RSG; Rejection Code: REVIEW.

22. Fiedler, L. A. (1988). **Rodent Pest Problems and Management in Eastern Africa.** *FAO Plant Prot.Bull.* 36: 125-134.

Chem Codes: EcoReference No.: 75721
Chemical of Concern: BDF,Tl,NaFA,ZnP,WFN,CPC,RSG; Rejection Code: REVIEW.

23. Fiedler, L. A. (1988). **Rodent Pest Problems and Management in Eastern Africa.** *FAO Plant Prot.Bull.* 36: 125-134.

Chem Codes: EcoReference No.: 75721
Chemical of Concern: BDF,Tl,NaFA,ZnP,WFN,CPC,RSG; Rejection Code: REVIEW.

24. Goodall, M. J., Volz, S. A., Johnston, J. J., Hurlbut, D. B., Mauldin, R. E., Griffin, D. L., and Petty, E. E. (1998). **Determination of Zinc Phosphide Residues in Corn (Zea mays) Grain, Fodder, and Forage.** *Bull Environ Contam Toxicol* 60: 877-884.

Chem Codes: Chemical of Concern: Zn,ZnP; Rejection Code: NO QUANTIFIABLE TOXICITY RESULTS.

25. Guale, F. G. , Stair, E. L., Johnson, B. W., Edwards, W. C. , and Haliburton, J. C. (1994). **Laboratory diagnosis of zinc phosphide poisoning.** *Veterinary and Human Toxicology [VET. HUM. TOXICOL.]* 36: 517-518.

Chem Codes: Chemical of Concern: ZNP; Rejection Code: HUMAN HEALTH.
Zinc phosphide, a readily-available rodenticide, poses a significant risk for intoxication in animals. Animals have been poisoned by ingesting treated bait or the carcasses of poisoned rodents. Toxicity is due to the liberation of phosphine gas in the stomach. Clinical signs include central nervous system excitation, depression and vomition. Similarities of clinical signs with other central nervous system toxicants make the diagnosis is difficult without a specific diagnostic test. The procedure outlined in this paper detects phosphine liberated from zinc phosphide by the addition of hydrochloric acid as well as the phosphine previously generated by contact with stomach acid. Classification: X 24131 Acute exposure zinc phosphide/ poisoning/ animals/ rodenticides

26. Hermann, A. M., Madan, Arun, Wanlass, M. W., Badri, V., Ahrenkiel, R., Morrison, Scott, and Gonzalez, Carlos (2004). **MOCVD growth and properties of Zn3P2 and Cd3P2 films for thermal photovoltaic applications.** *Solar Energy Materials and Solar Cells* 82: 241-252.

Chem Codes: Chemical of Concern: ZNP; Rejection Code: NO TOX DATA.
We report the growth and characterization (structural and electronic) of thin films of Zn3P2 and Cd3P2 grown by MOCVD. Heterojunctions of this pair of dopable semiconductors are being studied for applications as thermophotovoltaic devices. We have grown films of these materials on glass substrates, and X-ray diffaction studies confirm the phase formation and polycrystalline nature of the films. Optical absorption studies revealed three distinct transitions in the Zn3P2 films, at 1.3, 1.55, and 1.85 eV (in agreement with literature values found in single crystals). Analysis of optical spectra of the films showed direct transitions at 0.62, 0.65, and 0.71 eV. We also report measurements of photoconductivity and photoluminescence in these films. Hall effect measurements show the Cd3P2 films to be n-type with mobilities as high as 429 cm2/V s. Carrier lifetimes were also measured directly by a

photoconductive decay technique. The films show promise for TPV devices, although fabrication of such multilayer devices is in only a preliminary stage.

27. Hoffmann, Michael P., Gardner, Jeffrey, and Curtis, Paul D (20031023). **Fiber-supported pesticidal compositions.** 41 pp.

Chem Codes: Chemical of Concern: SPM,BDL; Rejection Code: NO TOX DATA.
The invention provides fibrous pest deterrents that combine the useful properties of a phys. barrier in the form of a nonwoven fibrous matrix with a chem. deterrent such as a pesticide, behavior-modifying compd. or a pest repellent. The use of such fibrous pest deterrents protects plants, animals and structures in both agricultural and nonagricultural settings from damage inflicted by pests. Unlike traditional pesticides, the behavior-modifying compd., pesticide or chem. deterrent of the invention is adsorbed or attached to a fibrous matrix, and so it is not so readily dispersed into the environment. Hence, use of the fibrous pest deterrents can reduce the levels of pesticides that inadvertently contaminate nontarget areas and pollute water supplies. [on SciFinder (R)] fiber/ supported/ pesticide/ compn Copyright: Copyright 2004 ACS on SciFinder (R))
Database: CAPLUS
Accession Number: AN 2003:836400
Chemical Abstracts Number: CAN 139:318718
Section Code: 5-4
Section Title: Agrochemical Bioregulators
Coden: USXXCO
Index Terms: Glycols Role: MOA (Modifier or additive use), USES (Uses) (alyplastic, fiber; support for pest-behavior-modifying compn.); Polyester fibers Role: MOA (Modifier or additive use), USES (Uses) (arom.; support for pest-behavior-modifying compn.); Naphthenic acids Role: BUU (Biological use, unclassified), BIOL (Biological study), USES (Uses) (copper salts, mammal repellent; fiber-supported pest-behavior-modifying compn.); Anethum graveolens; Insect attractants; Insect feeding inhibitors; Insect repellents; Nepeta cataria; Piper; Repellents; Zingiber officinale (fiber-supported pest-behavior-modifying compn.); Allomones; Kairomones; Monoterpenes; Phenols; Pheromones Role: BUU (Biological use, unclassified), BIOL (Biological study), USES (Uses) (fiber-supported pest-behavior-modifying compn.); Bacillus thuringiensis; Pesticides; Quassia; Schoenocaulon (fiber-supported pesticidal compn.); Pyrethrins Role: BUU (Biological use, unclassified), BIOL (Biological study), USES (Uses) (fiber-supported pesticidal compn.); Fibers Role: MOA (Modifier or additive use), USES (Uses) (fiber-supported pesticidal compn.); Albumins; Collagens; Gelatins; Neoprene rubber; Ovalbumin; Polyamides; Polyanhydrides; Polycarbonates; Polyoxyalkylenes; Polysiloxanes; Polyurethane fibers; Rayon Role: MOA (Modifier or additive use), USES (Uses) (fiber; support for pest-behavior-modifying compn.); Polyesters Role: MOA (Modifier or additive use), USES (Uses) (glycolide-based, fiber; support for pest-behavior-modifying compn.); Polyesters Role: MOA (Modifier or additive use), USES (Uses) (hydroxycarboxylic acid-based, fiber; support for pest-behavior-modifying compn.); Polyesters Role: MOA (Modifier or additive use), USES (Uses) (lactide, fiber; support for pest-behavior-modifying compn.); Capsicum annuum annuum (longum group, paprika; fiber-supported pest-behavior-modifying compn.); Capsicum annuum annuum (longum group; fiber-supported pest-behavior-modifying compn.); Polyethers Role: MOA (Modifier or additive use), USES (Uses) (polyamide-, fiber; support for pest-behavior-modifying compn.); Synthetic polymeric fibers Role: MOA (Modifier or additive use), USES (Uses) (polyamide-polyethers; support for pest-behavior-modifying compn.); Synthetic polymeric fibers Role: MOA (Modifier or additive use), USES (Uses) (polycarbonates; support for pest-behavior-modifying compn.); Polyamide fibers Role: MOA (Modifier or additive use), USES (Uses) (polyether-; support for pest-behavior-modifying compn.); Aves (repellents; fiber-supported pest-behavior-modifying compn.); Insecticides (sterilants; fiber-supported pest-behavior-modifying compn.); Polyester fibers; Polyolefin fibers Role: MOA (Modifier or additive use), USES (Uses) (support for pest-behavior-modifying compn.); Naphthenic acids Role: BUU (Biological use, unclassified), BIOL (Biological study), USES (Uses) (zinc salts, mammal repellent; fiber-supported pest-behavior-modifying compn.)
CAS Registry Numbers: 84-65-1 (Anthraquinone); 137-30-4 (Ziram.); 333-41-5 (Diazinon); 1332-40-7 (Copper oxychloride); 2032-65-7 (Methiocarb); 12407-86-2 (Trimethacarb); 15879-93-3 (Chloralose); 108173-90-6 (Guazatine) Role: BUU (Biological use, unclassified), BIOL (Biological study), USES (Uses) (bird repellent; fiber-supported pest-behavior-modifying compn.); 57-50-1D (Sugar); 58-08-2 (, Caffein); 404-86-4 (Capsaicin) Role: BUU (Biological use, unclassified), BIOL (Biological study), USES (Uses)

(fiber-supported pest-behavior-modifying compn.); 50-14-6 (> Ergocalciferol); 50-29-3 (DDT); 52-68-6 (Trichlorfon); 52-85-7 (Famphur); 54-11-5 (Nicotine); 55-38-9 (Fenthion); 55-98-1 (Busulfan); 56-23-5 (Carbon tetrachloride); 56-38-2 (Parathion); 56-72-4 (Coumaphos); 56-75-7 (Chloramphenicol); 57-24-9 (Strychnine); 58-89-9 (Lindane); 60-51-5 (Dimethoate); 60-57-1 (Dieldrin); 62-73-7 (Dichlorvos); 62-74-8 (Sodium fluoroacetate); 63-25-2 (Carbaryl); 67-66-3 (Chloroform); 70-38-2 (Dimethrin); 70-43-9 (Barthrin); 71-55-6 (Methylchloroform); 72-43-5 (Methoxychlor); 74-83-9 (Methyl bromide); 74-90-8 (Hydrogen cyanide); 75-09-2 (Methylene chloride); 75-21-8 (Ethylene oxide); 76-06-2 (,Chloropicrin); 76-44-8 (Heptachlor); 78-34-2 (Dioxathion); 78-53-5 (Amiton); 78-57-9 (Menazon); 78-87-5 (1,2-Dichloropropane); 79-34-5 (Tetrachloroethane); 80-05-7 (Bisphenol A); 81-81-2 (Warfarin); 81-82-3 (Coumachlor); 82-66-6 (Diphacinone); 83-26-1 (Pindone); 83-79-4 (Rotenone); 85-34-7 (Chlorfenac); 86-50-0 (Azinphosmethyl); 86-88-4 (Antu); 87-86-5 (Pentachlorophenol); 91-20-3 (Naphthalene); 96-24-2 (a-Chlorohydrin); 97-11-0 (Cyclethrin); 97-17-6 (Dichlofenthion); 97-27-8 (Chlorbetamide); 104-29-0 (Chlorphenesin); 106-46-7 (Paradichlorobenzene); 106-93-4 (Ethylene Dibromide); 107-06-2 (Ethylene dichloride); 107-13-1 (Acrylonitrile); 109-94-4 (Ethyl formate); 114-26-1 (Propoxur); 115-90-2 (Fensulfothion); 115-93-5 (Cythioate); 116-01-8 (Ethoatemethyl); 116-06-3 (Aldicarb); 118-75-2 (Chloranil); 119-12-0 (Pyridaphenthion); 121-20-0 (Cinerin II); 121-21-1 (Pyrethrin I); 121-29-9 (Pyrethrin II); 121-75-5 (Malathion); 122-14-5 (Fenitrothion); 122-15-6 (Dimetan); 126-22-7 (Butonate); 126-75-0 (Demeton-S); 131-89-5 (Dinex); 133-06-2 (Captan); 133-90-4 (,Chloramben); 141-66-2 (Dicrotophos); 143-50-0 (Chlordecone); 144-41-2 (Morphothion); 152-16-9 (Schradan); 288-14-2 (Isoxazole); 298-00-0 (Parathionmethyl); 298-02-2 (Phorate); 298-03-3 (Demeton-O); 298-04-4 (Disulfoton); 299-84-3 (Fenchlorphos); 299-86-5 (Crufomate); 300-76-5 (Naled); 301-12-2 (Oxydemetonmethyl); 302-04-5 (Thiocyanate); 309-00-2 (Aldrin); 314-40-9 (Bromacil); 315-18-4 (Mexacarbate); 327-98-0 (Trichloronat); 333-20-0 (Potassium thiocyanate); 370-50-3 (Flucofuron); 371-86-8 (Mipafox); 470-90-6 (Chlorfenvinphos); 483-63-6 (Crotamiton); 485-31-4 (Binapacryl); 494-52-0 (Anabasine); 500-28-7 (Chlorothion.); 507-60-8 (Scilliroside); 535-89-7 (Crimidine); 555-89-5 (Bis(p-chlorophenoxy)methane); 563-12-2 (Ethion); 572-48-5 (Coumithoate); 584-79-2 (Bioallethrin); 640-15-3 (Thiometon); 640-19-7 (Fluoroacetamide); 644-06-4 (Precocene II); 644-64-4 (Dimetilan); 671-04-5 (Carbanolate); 682-80-4 (Demephion-O); 732-11-6 (Phosmet); 786-19-6 (Carbophenothion); 867-27-6 (Demeton-O-methyl); 919-54-0 (Acethion); 919-76-6 (Amidithion); 919-86-8 (Demeton-S-methyl); 944-22-9 (FOnofos); 947-02-4 (Phosfolan); 950-10-7 (Mephosfolan); 950-37-8 (Methidathion); 991-42-4 (Norbormide); 1113-02-6 (Omethoate); 1129-41-5 (Metolcarb); 1172-63-0 (Jasmolin II); 1303-96-4 (Borax); 1314-84-7 (Zinc phosphide); 1327-53-3 (Arsenous oxide); 1344-81-6 (Calcium Polysulfide); 1403-17-4 (Candicidin); 1491-41-4 (Naftalofos); 1563-66-2 (Carbofuran); 1563-67-3 (Decarbofuran); 1646-88-4 (Aldoxycarb); 1716-09-2 (Fenthionethyl); 2032-59-9 (Aminocarb); 2104-96-3 (Bromophos); 2274-67-1 (Dimethylvinphos); 2275-14-1 (Phenkapton); 2275-18-5 (Prothoate); 2275-23-2 (Vamidothion); 2310-17-0 (Phosalone); 2385-85-5 (Mirex); 2425-10-7 (Xylylcarb); 2463-84-5 (Dicapthon); 2540-82-1 (Formothion); 2550-75-6 (Chlorbicyclen); 2587-90-8 (Demephion-S); 2595-54-2 (Mecarbam); 2597-03-7 (Phenthoate); 2631-37-0 (Promecarb); 2631-40-5 (Isoprocarb); 2633-54-7 (Trichlormetaphos-3); 2636-26-2 (Cyanophos); 2642-71-9 (Azinphosethyl); 2655-19-8 (Butacarb); 2669-32-1 (Lythidathion); 2674-91-1 (Oxydeprofos); 2699-79-8 (Sulfuryl fluoride); 2778-04-3 (Endothion); 2921-88-2 (Chlorpyrifos); 3383-96-8 (,Temephos); 3604-87-3 (.a.-Ecdysone); 3689-24-5 (Sulfotep); 3691-35-8 (Chlorophacinone); 3734-95-0 (Cyanthoate); 3761-41-9 (,Mesulfenfos); 3766-81-2 (Fenobucarb); 3811-49-2 (Dioxabenzofos); 4097-36-3 (Dinosam); 4104-14-7 (Phosacetim); 4151-50-2 (Sulfluramid); 4466-14-2 (Jasmolin I); 4824-78-6 (Bromophosethyl); 5221-49-8 (Pyrimitate); 5598-13-0 (Chlorpyrifosmethyl); 5598-52-7 (Fospirate); 5826-76-6 (Phosnichlor); 5834-96-8 (Azothoate); 5836-29-3 (Coumatetralyl); 5989-27-5; 6164-98-3 (Chlordimeform); 6392-46-7 (Allyxycarb); 6923-22-4 (Monocrotophos); 6988-21-2 (Dioxacarb); 7219-78-5 (Mazidox); 7257-41-2 (Dinoprop); 7292-16-2 (Propaphos); 7446-18-6 (Thallium sulfate); 7645-25-2 (Lead arsenate); 7696-12-0 (Tetramethrin); 7700-17-6 (Crotoxyphos); 7723-14-0 (Phosphorus); 7778-44-1 (Calcium arsenate); 7786-34-7 (Mevinphos); 7803-51-2 (Phosphine); 8001-35-2 (Camphechlor); 8022-00-2 (Demetonmethyl); 8065-36-9 (Bufencarb); 8065-48-3 (Demeton); 8065-62-1 (Demephion); 10112-91-1 (Mercurous chloride); 10124-50-2 (Potassium Arsenite); 10265-92-6 (Methamidophos); 10311-84-9 (Dialifos); 10453-86-8 (Resmethrin); 10537-47-0 (Malonoben); 10605-21-7 (Carbendazim); 11141-17-6 (Azadirachtin); 12002-03-8 (C.I. Pigment Green 21); 12789-03-6 (Chlordane); 13067-93-1 (Cyanofenphos); 13071-79-9 (Terbufos); 13171-21-6 (Phosphamidon); 13194-48-4 (Ethoprophos); 13457-18-6 (Pyrazophos); 13464-37-4 (Sodium arsenite;); 13593-03-8 (Quinalphos); 13593-08-3 (Quinalphosmethyl); 13804-51-8 (Juvenile hormone I); 14168-01-5 (Dilor); 14255-88-0 (Fenazaflor); 14816-16-1 (Phoximmethyl); 14816-18-3 (Phoxim); 14816-20-7 (Chlorphoxim); 15096-52-3 (Cryolite); 15263-53-3 (Cartap); 15589-31-8

(Terallethrin); 15662-33-6 (Ryania); 16752-77-5 (Methomyl); 16893-85-9 (Sodium hexafluorosilicate); 16984-48-8 (Fluoride); 17080-02-3 (Furethrin); 17125-80-3 (Barium hexafluorosilicate); 17598-02-6 (Precocene I); 17606-31-4 (Bensultap); 17702-57-7 (Formparanate); 18181-70-9 (Jodfenphos); 18181-80-1 (Bromopropylate); 18854-01-8 (Isoxathion); 19691-80-6 (Athidathion); 20276-83-9 (Prothidathion); 20425-39-2 (Pyresmethrin); 21548-32-3 (Fosthietan); 21609-90-5 (Leptophos); 22248-79-9 (>Tetrachlorvinphos); 22259-30-9 (Formetanate); 22431-62-5 (Bioethanomethrin); 22439-40-3 (Quinothion); 22569-71-7 (Phosphide); 22662-39-1 (Rafoxanide); 22781-23-3 (Bendiocarb); 22868-13-9 (Sodium Disulfide,<); 22963-93-5 (Juvenile hormone III); 23031-36-9 (Prallethrin); 23103-98-2 (Pirimicarb); 23135-22-0 (Oxamyl); 23505-41-1 (Pirimiphosethyl); 23526-02-5 (Thuringiensin,<); 23560-59-0 (Heptenophos); 24017-47-8 (Triazophos); 24019-05-4 (Sulcofuron); 24934-91-6 (Chlormephos); 25171-63-5 (Thiocarboxime); 25311-71-1 (Isofenphos); 25402-06-6 (Cinerin); 25601-84-7 (Methocrotophos); 26002-80-2 (Phenothrin); 26097-80-3 (Cambendazole); 28434-01-7 (Bioresmethrin); 28772-56-7 (Bromadiolone); 29173-31-7 (Mecarphon); 29232-93-7 (Pirimiphosmethyl); 29672-19-3 (Nitrilacarb); 29871-13-4 (Copper arsenate); 30087-47-9 (Fenethacarb); 30560-19-1 (Acephate); 30864-28-9 (Methacrifos); 31218-83-4 (Propetamphos); 31377-69-2 (Pirimetaphos); 31895-21-3 (Thiocyclam); 33089-61-1 (Amitraz); 33399-00-7 (Bromfenvinfos); 33629-47-9 (Butralin); 34218-61-6 (Juvenile hormone II); 34264-24-9 (Promacyl); 34643-46-4 (Prothiofos); 34681-10-2 (Butocarboxim); 34681-23-7 (Butoxycarboxim); 35367-31-8 (Penfluron); 35367-38-5 (Diflubenzuron); 35400-43-2 (Sulprofos); 35575-96-3 (Azamethiphos); 35764-59-1 (Cismethrin); 36145-08-1 (Chlorprazophos); 37032-15-8 (Sophamide); 38260-63-8 (Lirimfos); 38524-82-2 (Trifenofos); 38527-91-2 (Etaphos); 39196-18-4 (Thiofanox); 39247-96-6 (Primidophos); 39515-40-7 (Cyphenothrin); 39515-41-8 (Fenpropathrin); 40085-57-2 (Tazimcarb); 40596-69-8 (Methoprene); 40596-80-3 (Triprene); 40626-35-5 (Heterophos); 41096-46-2 (Hydroprene); 41198-08-7 (Profenofos); 41219-31-2 (Dithicrofos); 41483-43-6 (Bupirimate); 42509-80-8 (Isazofos); 42588-37-4 (Kinoprene); 50512-35-1; 51487-69-5 (Cloethocarb); 51596-10-2 (Milbemectin); 51630-58-1 (Fenvalerate); 51877-74-8 (Biopermethrin); 52315-07-8 (,Zetacypermethrin); 52645-53-1 (Permethrin); 52918-63-5 (Deltamethrin); 53558-25-1 (Pyrinuron); 54406-48-3 (Empenthrin); 54593-83-8 (Chlorethoxyfos); 55179-31-2 (Bitertanol); 55285-14-8 (Carbosulfan); 56073-07-5 (Difenacoum); 56073-10-0 (Brodifacoum); 56716-21-3 (Hyquincarb); 57808-65-8 (Closantel); 58481-70-2 (Dicresyl); 58842-20-9 (Nithiazine); 59669-26-0 (Thiodicarb); 60238-56-4 (Chlorthiophos); 60589-06-2 (Metoxadiazone); 60628-96-8 (Bifonazole); 61444-62-0 (Nifluridide); 61949-77-7 (Trans-Permethrin); 63333-35-7 (Bromethalin); 63771-69-7 (Zolaprofos); 63837-33-2 (Diofenolan); 63935-38-6 (Cycloprothrin); 64628-44-0 (Triflumuron); 64902-72-3 (Chlorsulfuron); 65383-73-5 (Precocene III); 65400-98-8 (Fenoxacrim); 65691-00-1 (Triarathene); 65907-30-4 (,Furathiocarb); 66215-27-8 (Cyromazine); 66230-04-4 (Esfenvalerate); 66841-25-6 (Tralomethrin); 67485-29-4 (Hydramethylnon); 68359-37-5 (Betacyfluthrin); 68523-18-2 (Fenpirithrin); 69327-76-0 (Buprofezin); 69409-94-5 (Fluvalinate); 70124-77-5 (Flucythrinate); 70288-86-7 (Ivermectin); 71422-67-8 (Chlorfluazuron); 71697-59-1 (Thetacypermethrin); 71751-41-2 (Abamectin); 72490-01-8 (Fenoxycarb); 72963-72-5 (Imiprothrin); 75867-00-4 (Fenfluthrin); 79538-32-2 (Tefluthrin); 80060-09-9 (Diafenthiuron); 80844-07-1 (Etofenprox); 81613-59-4 (Flupropadine); 82560-54-1 (Benfuracarb); 82657-04-3 (Bifenthrin); 83121-18-0 (Teflubenzuron); 83130-01-2 (Alanycarb); 83733-82-8 (Fosmethilan); 86479-06-3 (Hexaflumuron); 89784-60-1 (Pyraclofos); 90035-08-8 (Flocoumafen); 90338-20-8 (Butathiofos); 95465-99-9 (Cadusafos); 95737-68-1 (Pyriproxyfen); 96182-53-5 (Tebupirimfos); 96489-71-3 (Pyridaben); 101007-06-1 (Acrinathrin); 101463-69-8 (,Flufenoxuron); 102851-06-9 (Taufluvalinate); 103055-07-8 (Lufenuron); 103782-08-7 (Allosamidin); 104653-34-1 (Difethialone); 105024-66-6 (Silafluofen); 105779-78-0 (Pyrimidifen); 107713-58-6 (Flufenprox); 111872-58-3 (Halfenprox); 112143-82-5 (Triazamate.); 112226-61-6 (Halofenozide); 112410-23-8 (Tebufenozide); 112636-83-6 (Dicyclanil); 113036-88-7 (Flucycloxuron); 116714-46-6 (NOvaluron); 117704-25-3 (Doramectin); 118712-89-3 (Transfluthrin); 119168-77-3 (Tebufenpyrad); 119791-41-2 (Emamectin); 120068-37-3 (Fipronil); 121451-02-3 (Noviflumuron); 122453-73-0 (Chlorfenapyr); 123997-26-2 (Eprinomectin); 129558-76-5 (TOlfenpyrad); 143807-66-3 (Chromafenozide); 150824-47-8 (Nitenpyram); 153719-23-4 (Thiamethoxam); 158062-67-0 (Flonicamid); 161050-58-4 (Methoxyfenozide); 165252-70-0 (Dinotefuran); 168316-95-8 (Spinosad); 170015-32-4 (Flufenerim); 173584-44-6 (Indoxacarb); 179101-81-6 (Pyridalyl); 181587-01-9 (Ethiprole); 201593-84-2 (Bistrifluron); 209861-58-5 (Acetoprole); 210880-92-5 (Clothianidin); 220119-17-5 (Selamectin); 223419-20-3 (Profluthrin); 240494-70-6 (Metofluthrin); 283594-90-1 (Spiromesifen) Role: BUU (Biological use, unclassified), BIOL (Biological study), USES (Uses) (fiber-supported pesticidal compn.); 51-79-6 (Urethane); 78-79-5 (Isoprene); 108-05-4 (Vinyl acetate); 7782-42-5 (Graphite); 9002-88-4 (Polyethylene); 9002-89-5 (Poly(vinyl alcohol); 9003-05-8; 9003-39-8 (Poly(vinylpyrrolidone); 9003-53-6 (,Polystyrene); 9004-32-4 (Carboxymethyl cellulose sodium salt); 9004-

34-6D (Cellulose); 9004-65-3 (Hydroxypropyl methylcellulose); 9005-25-8 (Starch); 9005-32-7 (Alginic acid); 9005-49-6 (Heparin sulfate); 9007-28-7 (Chondroitin sulfate); 24980-41-4 (Polycaprolactone); 25085-53-4 (Isotactic polypropylene); 25248-42-4 (Polycaprolactone); 25322-68-3 (Poly(ethylene oxide); 25702-74-3 (Polysucrose); 25805-17-8 (Poly(ethyloxazoline); 26023-30-3 (Poly[oxy(1-methyl-2-oxo-1,2-ethanediyl)]); 26100-51-6 (Polylactic acid); 26780-50-7 (Poly(Lactide-co-glycolide); 31621-87-1 (Polydioxanone) Role: MOA (Modifier or additive use), USES (Uses) (fiber; support for pest-behavior-modifying compn.); 84-74-2 (Dibutyl phthalate); 94-96-2 (Ethohexadiol); 131-11-3 (Dimethyl phthalate); 134-62-3 (DEET); 532-34-3 (Butopyronoxyl); 3653-39-2 (,Hexamide); 19764-43-3 (Methoquin-butyl); 39589-98-5 (Dimethyl carbate); 66257-53-2 (Oxamate); 105726-67-8 (Methylneodecanamide); 119515-38-7 (Picaridin) Role: BUU (Biological use, unclassified), BIOL (Biological study), USES (Uses) (insect repellent; fiber-supported pest-behavior-modifying compn.); 7783-06-4 (Hydrogen sulfide) Role: BUU (Biological use, unclassified), BIOL (Biological study), USES (Uses) (mammal repellent; fiber-supported pest-behavior-modifying compn.); 9010-98-4 Role: MOA (Modifier or additive use), USES (Uses) (neoprene rubber, fiber; support for pest-behavior-modifying compn.)
Patent Application Country: Application: US
Priority Application Country: US
Priority Application Number: 2001-345349
Priority Application Date: 20011025

28. Hoffmann, Michael P., Gardner, Jeffrey, and Curtis, Paul D (20031023). **Fiber-supported pesticidal compositions.** 41 pp.

Chem Codes: Chemical of Concern: AZD,SPM; Rejection Code: NO TOX DATA.
The invention provides fibrous pest deterrents that combine the useful properties of a phys. barrier in the form of a nonwoven fibrous matrix with a chem. deterrent such as a pesticide, behavior-modifying compd. or a pest repellent. The use of such fibrous pest deterrents protects plants, animals and structures in both agricultural and nonagricultural settings from damage inflicted by pests. Unlike traditional pesticides, the behavior-modifying compd., pesticide or chem. deterrent of the invention is adsorbed or attached to a fibrous matrix, and so it is not so readily dispersed into the environment. Hence, use of the fibrous pest deterrents can reduce the levels of pesticides that inadvertently contaminate nontarget areas and pollute water supplies. [on SciFinder (R)] fiber/ supported/ pesticide/ compn Copyright: Copyright 2004 ACS on SciFinder (R))
Database: CAPLUS
Accession Number: AN 2003:836400
Chemical Abstracts Number: CAN 139:318718
Section Code: 5-4
Section Title: Agrochemical Bioregulators
Coden: USXXCO
Index Terms: Glycols Role: MOA (Modifier or additive use), USES (Uses) (alyplastic, fiber; support for pest-behavior-modifying compn.); Polyester fibers Role: MOA (Modifier or additive use), USES (Uses) (arom.; support for pest-behavior-modifying compn.); Naphthenic acids Role: BUU (Biological use, unclassified), BIOL (Biological study), USES (Uses) (copper salts, mammal repellent; fiber-supported pest-behavior-modifying compn.); Anethum graveolens; Insect attractants; Insect feeding inhibitors; Insect repellents; Nepeta cataria; Piper; Repellents; Zingiber officinale (fiber-supported pest-behavior-modifying compn.); Allomones; Kairomones; Monoterpenes; Phenols; Pheromones Role: BUU (Biological use, unclassified), BIOL (Biological study), USES (Uses) (fiber-supported pest-behavior-modifying compn.); Bacillus thuringiensis; Pesticides; Quassia; Schoenocaulon (fiber-supported pesticidal compn.); Pyrethrins Role: BUU (Biological use, unclassified), BIOL (Biological study), USES (Uses) (fiber-supported pesticidal compn.); Fibers Role: MOA (Modifier or additive use), USES (Uses) (fiber-supported pesticidal compn.); Albumins; Collagens; Gelatins; Neoprene rubber; Ovalbumin; Polyamides; Polyanhydrides; Polycarbonates; Polyoxyalkylenes; Polysiloxanes; Polyurethane fibers; Rayon Role: MOA (Modifier or additive use), USES (Uses) (fiber; support for pest-behavior-modifying compn.); Polyesters Role: MOA (Modifier or additive use), USES (Uses) (glycolide-based, fiber; support for pest-behavior-modifying compn.); Polyesters Role: MOA (Modifier or additive use), USES (Uses) (hydroxycarboxylic acid-based, fiber; support for pest-behavior-modifying compn.); Polyesters Role: MOA (Modifier or additive use), USES (Uses) (lactide, fiber; support for pest-behavior-modifying compn.); Capsicum annuum annuum (longum group, paprika; fiber-supported pest-behavior-modifying compn.); Capsicum annuum annuum (longum

group; fiber-supported pest-behavior-modifying compn.); Polyethers Role: MOA (Modifier or additive use), USES (Uses) (polyamide-, fiber; support for pest-behavior-modifying compn.); Synthetic polymeric fibers Role: MOA (Modifier or additive use), USES (Uses) (polyamide-polyethers; support for pest-behavior-modifying compn.); Synthetic polymeric fibers Role: MOA (Modifier or additive use), USES (Uses) (polycarbonates; support for pest-behavior-modifying compn.); Polyamide fibers Role: MOA (Modifier or additive use), USES (Uses) (polyether-; support for pest-behavior-modifying compn.); Aves (repellents; fiber-supported pest-behavior-modifying compn.); Insecticides (sterilants; fiber-supported pest-behavior-modifying compn.); Polyester fibers; Polyolefin fibers Role: MOA (Modifier or additive use), USES (Uses) (support for pest-behavior-modifying compn.); Naphthenic acids Role: BUU (Biological use, unclassified), BIOL (Biological study), USES (Uses) (zinc salts, mammal repellent; fiber-supported pest-behavior-modifying compn.)
CAS Registry Numbers: 84-65-1 (Anthraquinone); 137-30-4 (Ziram.); 333-41-5 (Diazinon); 1332-40-7 (Copper oxychloride); 2032-65-7 (Methiocarb); 12407-86-2 (Trimethacarb); 15879-93-3 (Chloralose); 108173-90-6 (Guazatine) Role: BUU (Biological use, unclassified), BIOL (Biological study), USES (Uses) (bird repellent; fiber-supported pest-behavior-modifying compn.); 57-50-1D (Sugar); 58-08-2 (, Caffein); 404-86-4 (Capsaicin) Role: BUU (Biological use, unclassified), BIOL (Biological study), USES (Uses) (fiber-supported pest-behavior-modifying compn.); 50-14-6 (> Ergocalciferol); 50-29-3 (DDT); 52-68-6 (Trichlorfon); 52-85-7 (Famphur); 54-11-5 (Nicotine); 55-38-9 (Fenthion); 55-98-1 (Busulfan); 56-23-5 (Carbon tetrachloride); 56-38-2 (Parathion); 56-72-4 (Coumaphos); 56-75-7 (Chloramphenicol); 57-24-9 (Strychnine); 58-89-9 (Lindane); 60-51-5 (Dimethoate); 60-57-1 (Dieldrin); 62-73-7 (Dichlorvos); 62-74-8 (Sodium fluoroacetate); 63-25-2 (Carbaryl); 67-66-3 (Chloroform); 70-38-2 (Dimethrin); 70-43-9 (Barthrin); 71-55-6 (Methylchloroform); 72-43-5 (Methoxychlor); 74-83-9 (Methyl bromide); 74-90-8 (Hydrogen cyanide); 75-09-2 (Methylene chloride); 75-21-8 (Ethylene oxide); 76-06-2 (,Chloropicrin); 76-44-8 (Heptachlor); 78-34-2 (Dioxathion); 78-53-5 (Amiton); 78-57-9 (Menazon); 78-87-5 (1,2-Dichloropropane); 79-34-5 (Tetrachloroethane); 80-05-7 (Bisphenol A); 81-81-2 (Warfarin); 81-82-3 (Coumachlor); 82-66-6 (Diphacinone); 83-26-1 (Pindone); 83-79-4 (Rotenone); 85-34-7 (Chlorfenac); 86-50-0 (Azinphosmethyl); 86-88-4 (Antu); 87-86-5 (Pentachlorophenol); 91-20-3 (Naphthalene); 96-24-2 (a-Chlorohydrin); 97-11-0 (Cyclethrin); 97-17-6 (Dichlofenthion); 97-27-8 (Chlorbetamide); 104-29-0 (Chlorphenesin); 106-46-7 (Paradichlorobenzene); 106-93-4 (Ethylene Dibromide); 107-06-2 (Ethylene dichloride); 107-13-1 (Acrylonitrile); 109-94-4 (Ethyl formate); 114-26-1 (Propoxur); 115-90-2 (Fensulfothion); 115-93-5 (Cythioate); 116-01-8 (Ethoatemethyl); 116-06-3 (Aldicarb); 118-75-2 (Chloranil); 119-12-0 (Pyridaphenthion); 121-20-0 (Cinerin II); 121-21-1 (Pyrethrin I); 121-29-9 (Pyrethrin II); 121-75-5 (Malathion); 122-14-5 (Fenitrothion); 122-15-6 (Dimetan); 126-22-7 (Butonate); 126-75-0 (Demeton-S); 131-89-5 (Dinex); 133-06-2 (Captan); 133-90-4 (,Chloramben); 141-66-2 (Dicrotophos); 143-50-0 (Chlordecone); 144-41-2 (Morphothion); 152-16-9 (Schradan); 288-14-2 (Isoxazole); 298-00-0 (Parathionmethyl); 298-02-2 (Phorate); 298-03-3 (Demeton-O); 298-04-4 (Disulfoton); 299-84-3 (Fenchlorphos); 299-86-5 (Crufomate); 300-76-5 (Naled); 301-12-2 (Oxydemetonmethyl); 302-04-5 (Thiocyanate); 309-00-2 (Aldrin); 314-40-9 (Bromacil); 315-18-4 (Mexacarbate); 327-98-0 (Trichloronat); 333-20-0 (Potassium thiocyanate); 370-50-3 (Flucofuron); 371-86-8 (Mipafox); 470-90-6 (Chlorfenvinphos); 483-63-6 (Crotamiton); 485-31-4 (Binapacryl); 494-52-0 (Anabasine); 500-28-7 (Chlorothion.); 507-60-8 (Scilliroside); 535-89-7 (Crimidine); 555-89-5 (Bis(p-chlorophenoxy)methane); 563-12-2 (Ethion); 572-48-5 (Coumithoate); 584-79-2 (Bioallethrin); 640-15-3 (Thiometon); 640-19-7 (Fluoroacetamide); 644-06-4 (Precocene II); 644-64-4 (Dimetilan); 671-04-5 (Carbanolate); 682-80-4 (Demephion-O); 732-11-6 (Phosmet); 786-19-6 (Carbophenothion); 867-27-6 (Demeton-O-methyl); 919-54-0 (Acethion); 919-76-6 (Amidithion); 919-86-8 (Demeton-S-methyl); 944-22-9 (FOnofos); 947-02-4 (Phosfolan); 950-10-7 (Mephosfolan); 950-37-8 (Methidathion); 991-42-4 (Norbormide); 1113-02-6 (Omethoate); 1129-41-5 (Metolcarb); 1172-63-0 (Jasmolin II); 1303-96-4 (Borax); 1314-84-7 (Zinc phosphide); 1327-53-3 (Arsenous oxide); 1344-81-6 (Calcium Polysulfide); 1403-17-4 (Candicidin); 1491-41-4 (Naftalofos); 1563-66-2 (Carbofuran); 1563-67-3 (Decarbofuran); 1646-88-4 (Aldoxycarb); 1716-09-2 (Fenthionethyl); 2032-59-9 (Aminocarb); 2104-96-3 (Bromophos); 2274-67-1 (Dimethylvinphos); 2275-14-1 (Phenkapton); 2275-18-5 (Prothoate); 2275-23-2 (Vamidothion); 2310-17-0 (Phosalone); 2385-85-5 (Mirex); 2425-10-7 (Xylylcarb); 2463-84-5 (Dicapthon); 2540-82-1 (Formothion); 2550-75-6 (Chlorbicyclen); 2587-90-8 (Demephion-S); 2595-54-2 (Mecarbam); 2597-03-7 (Phenthoate); 2631-37-0 (Promecarb); 2631-40-5 (Isoprocarb); 2633-54-7 (Trichlormetaphos-3); 2636-26-2 (Cyanophos); 2642-71-9 (Azinphosethyl); 2655-19-8 (Butacarb); 2669-32-1 (Lythidathion); 2674-91-1 (Oxydeprofos); 2699-79-8 (Sulfuryl fluoride); 2778-04-3 (Endothion); 2921-88-2 (Chlorpyrifos); 3383-96-8 (,Temephos); 3604-87-3 (.a.-Ecdysone); 3689-24-5 (Sulfotep); 3691-35-8

(Chlorophacinone); 3734-95-0 (Cyanthoate); 3761-41-9 (,Mesulfenfos); 3766-81-2 (Fenobucarb); 3811-49-2 (Dioxabenzofos); 4097-36-3 (Dinosam); 4104-14-7 (Phosacetim); 4151-50-2 (Sulfluramid); 4466-14-2 (Jasmolin I); 4824-78-6 (Bromophosethyl); 5221-49-8 (Pyrimitate); 5598-13-0 (Chlorpyrifosmethyl); 5598-52-7 (Fospirate); 5826-76-6 (Phosnichlor); 5834-96-8 (Azothoate); 5836-29-3 (Coumatetralyl); 5989-27-5; 6164-98-3 (Chlordimeform); 6392-46-7 (Allyxycarb); 6923-22-4 (Monocrotophos); 6988-21-2 (Dioxacarb); 7219-78-5 (Mazidox); 7257-41-2 (Dinoprop); 7292-16-2 (Propaphos); 7446-18-6 (Thallium sulfate); 7645-25-2 (Lead arsenate); 7696-12-0 (Tetramethrin); 7700-17-6 (Crotoxyphos); 7723-14-0 (Phosphorus); 7778-44-1 (Calcium arsenate); 7786-34-7 (Mevinphos); 7803-51-2 (Phosphine); 8001-35-2 (Camphechlor); 8022-00-2 (Demetonmethyl); 8065-36-9 (Bufencarb); 8065-48-3 (Demeton); 8065-62-1 (Demephion); 10112-91-1 (Mercurous chloride); 10124-50-2 (Potassium Arsenite); 10265-92-6 (Methamidophos); 10311-84-9 (Dialifos); 10453-86-8 (Resmethrin); 10537-47-0 (Malonoben); 10605-21-7 (Carbendazim); 11141-17-6 (Azadirachtin); 12002-03-8 (C.I. Pigment Green 21); 12789-03-6 (Chlordane); 13067-93-1 (Cyanofenphos); 13071-79-9 (Terbufos); 13171-21-6 (Phosphamidon); 13194-48-4 (Ethoprophos); 13457-18-6 (Pyrazophos); 13464-37-4 (Sodium arsenite;); 13593-03-8 (Quinalphos); 13593-08-3 (Quinalphosmethyl); 13804-51-8 (Juvenile hormone I); 14168-01-5 (Dilor); 14255-88-0 (Fenazaflor); 14816-16-1 (Phoximmethyl); 14816-18-3 (Phoxim); 14816-20-7 (Chlorphoxim); 15096-52-3 (Cryolite); 15263-53-3 (Cartap); 15589-31-8 (Terallethrin); 15662-33-6 (Ryania); 16752-77-5 (Methomyl); 16893-85-9 (Sodium hexafluorosilicate); 16984-48-8 (Fluoride); 17080-02-3 (Furethrin); 17125-80-3 (Barium hexafluorosilicate); 17598-02-6 (Precocene I); 17606-31-4 (Bensultap); 17702-57-7 (Formparanate); 18181-70-9 (Jodfenphos); 18181-80-1 (Bromopropylate); 18854-01-8 (Isoxathion); 19691-80-6 (Athidathion); 20276-83-9 (Prothidathion); 20425-39-2 (Pyresmethrin); 21548-32-3 (Fosthietan); 21609-90-5 (Leptophos); 22248-79-9 (>Tetrachlorvinphos); 22259-30-9 (Formetanate); 22431-62-5 (Bioethanomethrin); 22439-40-3 (Quinothion); 22569-71-7 (Phosphide); 22662-39-1 (Rafoxanide); 22781-23-3 (Bendiocarb); 22868-13-9 (Sodium Disulfide,<); 22963-93-5 (Juvenile hormone III); 23031-36-9 (Prallethrin); 23103-98-2 (Pirimicarb); 23135-22-0 (Oxamyl); 23505-41-1 (Pirimiphosethyl); 23526-02-5 (Thuringiensin,<); 23560-59-0 (Heptenophos); 24017-47-8 (Triazophos); 24019-05-4 (Sulcofuron); 24934-91-6 (Chlormephos); 25171-63-5 (Thiocarboxime); 25311-71-1 (Isofenphos); 25402-06-6 (Cinerin); 25601-84-7 (Methocrotophos); 26002-80-2 (Phenothrin); 26097-80-3 (Cambendazole); 28434-01-7 (Bioresmethrin); 28772-56-7 (Bromadiolone); 29173-31-7 (Mecarphon); 29232-93-7 (Pirimiphosmethyl); 29672-19-3 (Nitrilacarb); 29871-13-4 (Copper arsenate); 30087-47-9 (Fenethacarb); 30560-19-1 (Acephate); 30864-28-9 (Methacrifos); 31218-83-4 (Propetamphos); 31377-69-2 (Pirimetaphos); 31895-21-3 (Thiocyclam); 33089-61-1 (Amitraz); 33399-00-7 (Bromfenvinfos); 33629-47-9 (Butralin); 34218-61-6 (Juvenile hormone II); 34264-24-9 (Promacyl); 34643-46-4 (Prothiofos); 34681-10-2 (Butocarboxim); 34681-23-7 (Butoxycarboxim); 35367-31-8 (Penfluron); 35367-38-5 (Diflubenzuron); 35400-43-2 (Sulprofos); 35575-96-3 (Azamethiphos); 35764-59-1 (Cismethrin); 36145-08-1 (Chlorprazophos); 37032-15-8 (Sophamide); 38260-63-8 (Lirimfos); 38524-82-2 (Trifenofos); 38527-91-2 (Etaphos); 39196-18-4 (Thiofanox); 39247-96-6 (Primidophos); 39515-40-7 (Cyphenothrin); 39515-41-8 (Fenpropathrin); 40085-57-2 (Tazimcarb); 40596-69-8 (Methoprene); 40596-80-3 (Triprene); 40626-35-5 (Heterophos); 41096-46-2 (Hydroprene); 41198-08-7 (Profenofos); 41219-31-2 (Dithicrofos); 41483-43-6 (Bupirimate); 42509-80-8 (Isazofos); 42588-37-4 (Kinoprene); 50512-35-1; 51487-69-5 (Cloethocarb); 51596-10-2 (Milbemectin); 51630-58-1 (Fenvalerate); 51877-74-8 (Biopermethrin); 52315-07-8 (,Zetacypermethrin); 52645-53-1 (Permethrin); 52918-63-5 (Deltamethrin); 53558-25-1 (Pyrinuron); 54406-48-3 (Empenthrin); 54593-83-8 (Chlorethoxyfos); 55179-31-2 (Bitertanol); 55285-14-8 (Carbosulfan); 56073-07-5 (Difenacoum); 56073-10-0 (Brodifacoum); 56716-21-3 (Hyquincarb); 57808-65-8 (Closantel); 58481-70-2 (Dicresyl); 58842-20-9 (Nithiazine); 59669-26-0 (Thiodicarb); 60238-56-4 (Chlorthiophos); 60589-06-2 (Metoxadiazone); 60628-96-8 (Bifonazole); 61444-62-0 (Nifluridide); 61949-77-7 (Trans-Permethrin); 63333-35-7 (Bromethalin); 63771-69-7 (Zolaprofos); 63837-33-2 (Diofenolan); 63935-38-6 (Cycloprothrin); 64628-44-0 (Triflumuron); 64902-72-3 (Chlorsulfuron); 65383-73-5 (Precocene III); 65400-98-8 (Fenoxacrim); 65691-00-1 (Triarathene); 65907-30-4 (,Furathiocarb); 66215-27-8 (Cyromazine); 66230-04-4 (Esfenvalerate); 66841-25-6 (Tralomethrin); 67485-29-4 (Hydramethylnon); 68359-37-5 (Betacyfluthrin); 68523-18-2 (Fenpirithrin); 69327-76-0 (Buprofezin); 69409-94-5 (Fluvalinate); 70124-77-5 (Flucythrinate); 70288-86-7 (Ivermectin); 71422-67-8 (Chlorfluazuron); 71697-59-1 (Thetacypermethrin); 71751-41-2 (Abamectin); 72490-01-8 (Fenoxycarb); 72963-72-5 (Imiprothrin); 75867-00-4 (Fenfluthrin); 79538-32-2 (Tefluthrin); 80060-09-9 (Diafenthiuron); 80844-07-1 (Etofenprox); 81613-59-4 (Flupropadine); 82560-54-1 (Benfuracarb); 82657-04-3 (Bifenthrin); 83121-18-0 (Teflubenzuron); 83130-01-2 (Alanycarb); 83733-82-8 (Fosmethilan); 86479-06-3 (Hexaflumuron); 89784-60-1 (Pyraclofos); 90035-08-8 (Flocoumafen); 90338-20-8 (Butathiofos); 95465-99-9 (Cadusafos); 95737-68-1 (Pyriproxyfen); 96182-53-5

(Tebupirimfos); 96489-71-3 (Pyridaben); 101007-06-1 (Acrinathrin); 101463-69-8 (,Flufenoxuron); 102851-06-9 (Taufluvalinate); 103055-07-8 (Lufenuron); 103782-08-7 (Allosamidin); 104653-34-1 (Difethialone); 105024-66-6 (Silafluofen); 105779-78-0 (Pyrimidifen); 107713-58-6 (Flufenprox); 111872-58-3 (Halfenprox); 112143-82-5 (Triazamate.); 112226-61-6 (Halofenozide); 112410-23-8 (Tebufenozide); 112636-83-6 (Dicyclanil); 113036-88-7 (Flucycloxuron); 116714-46-6 (NOvaluron); 117704-25-3 (Doramectin); 118712-89-3 (Transfluthrin); 119168-77-3 (Tebufenpyrad); 119791-41-2 (Emamectin); 120068-37-3 (Fipronil); 121451-02-3 (Noviflumuron); 122453-73-0 (Chlorfenapyr); 123997-26-2 (Eprinomectin); 129558-76-5 (TOlfenpyrad); 143807-66-3 (Chromafenozide); 150824-47-8 (Nitenpyram); 153719-23-4 (Thiamethoxam); 158062-67-0 (Flonicamid); 161050-58-4 (Methoxyfenozide); 165252-70-0 (Dinotefuran); 168316-95-8 (Spinosad); 170015-32-4 (Flufenerim); 173584-44-6 (Indoxacarb); 179101-81-6 (Pyridalyl); 181587-01-9 (Ethiprole); 201593-84-2 (Bistrifluron); 209861-58-5 (Acetoprole); 210880-92-5 (Clothianidin); 220119-17-5 (Selamectin); 223419-20-3 (Profluthrin); 240494-70-6 (Metofluthrin); 283594-90-1 (Spiromesifen) Role: BUU (Biological use, unclassified), BIOL (Biological study), USES (Uses) (fiber-supported pesticidal compn.); 51-79-6 (Urethane); 78-79-5 (Isoprene); 108-05-4 (Vinyl acetate); 7782-42-5 (Graphite); 9002-88-4 (Polyethylene); 9002-89-5 (Poly(vinyl alcohol); 9003-05-8; 9003-39-8 (Poly(vinylpyrrolidone); 9003-53-6 (,Polystyrene); 9004-32-4 (Carboxymethyl cellulose sodium salt); 9004-34-6D (Cellulose); 9004-65-3 (Hydroxypropyl methylcellulose); 9005-25-8 (Starch); 9005-32-7 (Alginic acid); 9005-49-6 (Heparin sulfate); 9007-28-7 (Chondroitin sulfate); 24980-41-4 (Polycaprolactone); 25085-53-4 (Isotactic polypropylene); 25248-42-4 (Polycaprolactone); 25322-68-3 (Poly(ethylene oxide); 25702-74-3 (Polysucrose); 25805-17-8 (Poly(ethyloxazoline); 26023-30-3 (Poly[oxy(1-methyl-2-oxo-1,2-ethanediyl)]); 26100-51-6 (Polylactic acid); 26780-50-7 (Poly(Lactide-co-glycolide); 31621-87-1 (Polydioxanone) Role: MOA (Modifier or additive use), USES (Uses) (fiber; support for pest-behavior-modifying compn.); 84-74-2 (Dibutyl phthalate); 94-96-2 (Ethohexadiol); 131-11-3 (Dimethyl phthalate); 134-62-3 (DEET); 532-34-3 (Butopyronoxyl); 3653-39-2 (,Hexamide); 19764-43-3 (Methoquin-butyl); 39589-98-5 (Dimethyl carbate); 66257-53-2 (Oxamate); 105726-67-8 (Methylneodecanamide); 119515-38-7 (Picaridin) Role: BUU (Biological use, unclassified), BIOL (Biological study), USES (Uses) (insect repellent; fiber-supported pest-behavior-modifying compn.); 7783-06-4 (Hydrogen sulfide) Role: BUU (Biological use, unclassified), BIOL (Biological study), USES (Uses) (mammal repellent; fiber-supported pest-behavior-modifying compn.); 9010-98-4 Role: MOA (Modifier or additive use), USES (Uses) (neoprene rubber, fiber; support for pest-behavior-modifying compn.)
Patent Application Country: Application: US
Priority Application Country: US
Priority Application Number: 2001-345349
Priority Application Date: 20011025

29. Hsu, C. H., Quistad, G. B., and Casida, J. E. (1998). **Phosphine-induced oxidative stress in Hepa 1c1c7 cells.** *Toxicological Sciences [Toxicol.Sci.]* 46: 204-210.

<u>Chem Codes</u>: Chemical of Concern: ZnP; <u>Rejection Code</u>: IN VITRO.
1096-6080. Phosphine (PH sub(3)), from hydrolysis of metal phosphides, is an important insecticide (aluminum phosphide) and rodenticide (zinc phosphide) and is considered genotoxic and cytotoxic in mammals. This study tests the hypothesis that PH sub(3)-induced genotoxicity and cytotoxicity are associated with oxidative stress by examining liver (Hepa 1c1c7) cells for possible relationships among cell death, increases in reactive oxygen species (ROS) and lipid peroxidation, and elevated 8-hydroxyguanine (8-OH-Gua) in DNA. PH sub(3) was generated from 0.5 mM magnesium phosphide (Mg sub(3)P sub(2)) to give 1 mM PH sub(3) as the nominal and maximal concentration. This level causes 31% cell death at 6 h, measured by lactate dehydrogenase leakage, with appropriate dependence on concentration and time. The intracellular ROS level is elevated within 0.5 h following exposure to PH sub(3), peaking at 235% of the control by about 1 h. Lipid peroxidation (measured as malondialdehyde plus 4-hydroxyalkenals) is increased up to 504% by PH sub(3) at 6 h in a time-dependent manner. The level of 8-OH-Gua in DNA, a biomarker of mutagenic oxidative DNA damage analyzed by GC/MS, increases to 259% at 6 h after PH sub(3) treatment. Antioxidants significantly attenuate the PH sub(3)-induced ROS formation, lipid peroxidation, 8-OH-Gua formation in DNA, and cell death, with the general order for effectiveness of GSH (5 mM) and D-mannitol (10 mM) (hydroxyl radical scavengers), then Tempol (2.5 mM) and sodium azide (3 mM) (superoxide anion and singlet oxygen scavengers, respectively). These studies support the hypothesis that PH sub(3)-induced mutagenic and cytotoxic effects are due to increased ROS levels, probably hydroxyl radicals, initiating

oxidative damage

30. HSU C-H, QUISTAD GB, and CASIDA JE (1998). **Phosphine-induced oxidative stress in hepa 1c1c7 cells.** *TOXICOLOGICAL SCIENCES;* 46: 204-210.

Chem Codes: Chemical of Concern: ZNP; Rejection Code: IN VITRO.
BIOSIS COPYRIGHT: BIOL ABS. Phosphine (PH3), from hydrolysis of metal phosphides, is an important insecticide (aluminum phosphide) and rodenticide (zinc phosphide) and is considered genotoxic and cytotoxic in mammals. This study tests the hypothesis that PH3-induced genotoxicity and cytotoxicity are associated with oxidative stress by examining liver (Hepa 1c1c7) cells for possible relationships among cell death, increases in reactive oxygen species (ROS) and lipid peroxidation, and elevated 8-hydroxyguanine (8-OH-Gua) in DNA. PH3 was generated from 0.5 mM magnesium phosphide (Mg3P2) to give 1 mM PH3 as the nominal and maximal concentration. This level causes 31% cell death at 6 h, measured by lactate dehydrogenase leakage, with appropriate dependence on concentration and time. The intracellular ROS level is elevated within 0.5 h following exposure to PH3, peaking at 235% of the control by about 1 h. Lipid peroxidation (measured as malondialdehyde plus 4-hydroxyalkenals) is increased up to 504% by Animals/ Cytology/ Histocytochemistry/ Animals/Genetics/ Biochemistry/Methods/ Biochemistry/ Energy Metabolism/ Respiration/ Digestive System/ Poisoning/ Animals, Laboratory/ Neoplasms/ Muridae

31. Hygnstrom, S. E., VerCauteren, K. C., Hines, R. A., and Mansfield, C. W. (2000). **Efficacy of in-furrow zinc phosphide pellets for controlling rodent damage in no-till corn.** *International Biodeterioration and Biodegradation, 45 (3-4) pp. 215-222*.

Chem Codes: Chemical of Concern: ZNP; Rejection Code: HUMAN HEALTH.
Plagues of rodents in field crops have been a problem of human societies for centuries. These problems diminished with the onset of effective herbicides and clean farming practices in the 1960s, but there has been a resurgence of rodent irruptions in cropfields since the advent of conservation tillage systems. We examined the efficacy of in-furrow applications of 2% zinc phosphide (Zn inferior 3P inferior 2) pellets (27.5 kg ha superior - superior 1 [5 lb acre superior - superior 1]) at planting for the control of rodent damage in no-till corn. Three independent field studies were conducted in northeastern NE, southern IL, and southern IN. Vole populations in the most severely damaged fields (IL) ranged from 104 to 138 active colonies ha superior - superior 1. Zn inferior 3P inferior 2 reduced yield loss in the three study areas by 7-34%. Projected economic returns ranged from US dollar-sign 1044 to US dollar-sign 5360, based on representative 64-ha fields and a net profit of US dollar-sign 250 ha superior - superior 1. Benefit:cost ratios ranged from 1.1 to 5.6:1 and were directly related to vole population levels. To prevent rodent damage in no-till cornfields, we recommend an integrated pest management approach that incorporates the use of a combination of the following techniques: rodent population monitoring, economic thresholds, mowing, early pre-plant herbicides, broadcast whole-kernel corn, and in-furrow applications of Zn inferior 3P inferior 2 pellets. (C) 2000 Elsevier Science Ltd.
Classification: 92.11.1.8 PLANT PATHOLOGY AND SYMBIOSES: Plant Pathology: Other pests
Conservation tillage/ Corn/ Economics/ Efficacy/ Field mice/ No-till/ Microtus/ Peromyscus/ Rodents/ Voles/ Wildlife damage management/ Zinc phosphide

32. IDRIS, M. and PRAKASH, I. (1992). **SHYNESS BEHAVIOUR.** *PRAKASH, I. AND P. K. GHOSH (ED.). RODENTS IN INDIAN AGRICULTURE, VOL.1. STATE OF THE ART. XVII+707P. SCIENTIFIC PUBLISHERS: JODHPUR, INDIA. ISBN 81-7233-013-8.* 433-443.

Chem Codes: Chemical of Concern: ZNP; Rejection Code: REVIEW.
BIOSIS COPYRIGHT: BIOL ABS. RRM FUNAMBULUS-PENNANTI GERBILLUS-GLEADOWI TATERA-INDICA MERIONES-HURRIANAE RATTUS-RATTUS RATTUS-MELTADA RATTUS-CUTCHICUS MUS-MUSCULUS MUS-BOODUGA MUS-PLATYTHRIX BANDICOTA-BENGALENSIS BANDICOTA-INDICA ZINC PHOSPHIDE BEHAVIOR PEST CONTROL RODENTICIDE Behavior, Animal/ Animals, Wild/ Conservation of Natural Resources/ Ecology/ Minerals/ Poisoning/ Animals, Laboratory/ Herbicides/ Pest Control/ Pesticides/ Microtinae/ Muridae/ Sciuridae

33. Keith, J. O. and Bruggers, R. L. (1998). **Review Of Hazards To Raptors From Pest Control In Sahelian Africa.** 32: 151-158.

Chem Codes: Chemical of Concern: ZnP CHLOR; Rejection Code: SURVEY.
biosis copyright: biol abs. pesticides applied to control pests sometimes kill raptors. one region receiving frequent and heavy pesticide treatments is the sahel that lies between the sahara desert and tropical forest areas of northern africa. plagues of locusts, grasshoppers, birds and rodents periodically develop in the sahel when heavy rainfall follows periods of drought. insecticides, avicides and rodenticides are applied over millions of hectares at rates known to kill birds. observations indicate that many pesticide applications in the sahel do not cause serious mortality. only minimal raptor losses were reported following applications of malathion, fenitrothion, chlorpyrifos and other insecticides for control of locusts and grasshoppers scattered over about 14 million acres in northern africa. similarly, applications of zinc phosphide bait on 430 000 ha in sudan did not cause known losses of raptors. in contrast, use of fenthion to control red-billed quelea (quelea queka) in breeding colonies often killed or debilitated nontarget vertebrates, including raptors. a more specific avicide should be developed for quelea control. until then, nontarget birds should be kept out of colonies for several days following avicide applications and dead quelea should be removed from treated areas. ecology/ environmental biology-wildlife management-terrestrial/ toxicology-environmental and industrial toxicology/ public health: environmental health-air, water and soil pollution/ pest control, general/ pesticides/ herbicides/ economic entomology-animal pests/ orthoptera/ falconiformes/ passeriformes

34. Khan, A. A. (1986). **Evaluation of Four Rodenticides Against Rodents in Sugarcane Fields.** *In: C.G.J.Richards and T.Y.Ku (Eds.), Control of Mammal Pests, IV Congress, Taylor and Francis, London, England, UK* 171-172.

    Chem Codes: Chemical of Concern: BDF,ZnP; Rejection Code: ABSTRACT.

35. Khan, A. A. (1986). **Evaluation of Four Rodenticides Against Rodents in Sugarcane Fields.** *In: C.G.J.Richards and T.Y.Ku (Eds.), Control of Mammal Pests, IV Congress, Taylor and Francis, London, England, UK* 171-172.

    Chem Codes: Chemical of Concern: BDF,ZnP; Rejection Code: ABSTRACT.

36. Khan, A. A., Munir, S., and Shakoori, A. R. (1998). **Development of under-ground baiting technique for control of rats in rice fields in Pakistan.** *International Biodeterioration and Biodegradation* 42: 129-134.

    Chem Codes: Chemical of Concern: ZnP; Rejection Code: NO TOXICANT.
    0964-8305. An underground baiting technique was evaluated and developed for the control of rats in rice fields. Both acute and anticoagulant baits were used against Bandicota bengalensis and Nesokia indica which burrow in the dikes of rice fields and are major pests of rice crop. The efficacy of three formulations of 2% zinc phosphide (ZP) in reducing rodent activity was highly significant. Wax coated cakes proved better than the grain and plain cake formulations. The treatments with wax blocks of 0.005% brodifacoum (Klerat) and 0.0375% coumatetralyl were, also, significant where the estimated mortality was 98.8% and 98.95% respectively. This underground baiting method holds promise and is, therefore, recommended for further testing and evaluation at the operational level

37. Khan, A. A., Munir, S., and Shakoori, A. R. (1998). **Development of under-ground baiting technique for control of rats in rice fields in Pakistan.** *International Biodeterioration and Biodegradation* 42: 129-134.

    Chem Codes: Chemical of Concern: BDF; Rejection Code: NO TOXICANT.
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38. Korninger, H. C. and Lenz, K. (**Poisoning In Childhood - An Information Center Report.**

Chem Codes: Chemical of Concern: ZnP Cu; Rejection Code: HUMAN HEALTH.
pestab. four thousand eighteen inquiries registered at the poison information center in vienna, austria, in 1974-1976 concerning possible poisoning in children are analyzed. pesticides accounted for 115 cases (2.9%). forty-three cases of pesticides poisoning were followed up. the toxic compounds were identified as alkylphosphates in 5 cases; aromatic nitro compounds, barium silicofluoride, carbamates, coumarin derivatives, combination sprays, copper oxychloride, and copper sulfate in 1 case each; crimidine, insect strips (dichlorvos) zinc phosphide and phenoxycarboxylic acids in 4 cases each; halogenated hydrocarbons in 5; metaldehyde in 2; thiourea compounds in 2; thallium in 5; and an indanedione derivative in 1. the poisoning was asymptomatic in 34 cases, mild in 6, and severe in 3. there were no fatal poisonings with pesticides.

39. Kumar, S. (1992). **For Control of Bamboo Rats in Rubber Plantation in Tripura.** *Indian For.* 118: 869-870.

Chem Codes: Chemical of Concern: BDF,ZnP; Rejection Code: NO TOX DATA.

40. Kumar, S. (1992). **For Control of Bamboo Rats in Rubber Plantation in Tripura.** *Indian For.* 118: 869-870.

Chem Codes: Chemical of Concern: BDF,ZnP; Rejection Code: NO TOX DATA.

41. MARSHALL, E. (1989). **WHY YOU SHOULD USE TRACKING POWDERS.** *PEST CONTROL;* 57: 34-35.

Chem Codes: Chemical of Concern: ZNP
BIOSIS COPYRIGHT: BIOL ABS. RRM RAT MOUSE RODENTS ACTIVE INGREDIENT ANTICOAGULANT RODENTICIDE PESTICIDE ZINC PHOSPHIDE PESTS PEST CONTROL GROOMING Behavior, Animal/ Animals, Wild/ Conservation of Natural Resources/ Ecology/ Biochemistry/ Herbicides/ Pest Control/ Pesticides/ Rodentia/ Muridae

42. Mittal, V. P. and Vyas, H. J. (1992). **Groundnut.** *In: I.Prakash and P.K.Ghosh (Eds.), Rodents in Indian Agriculture, Volume 1, State of the Art, Sci.Publ., Jodhpur, India* 249-264.

Chem Codes: EcoReference No.: 75524
Chemical of Concern: ZnP,BDL,CLC; Rejection Code: REVIEW.

43. Moghadamnia, A A and Abdollahi, M (2002). **An epidemiological study of poisoning in northern Islamic Republic of Iran.** *Eastern Mediterranean Health Journal = a Revue De Sante De La Mediterranee Orientale = Al-Majallah Al-Sihhiyah Li-Sharq Al-Mutawassit* 8: 88-94.

Chem Codes: Chemical of Concern: ZNP; Rejection Code: HUMAN HEALTH.
We examined the causes and mortality of poisoning in the province of Mazandaran. In all, 1751 poisoning cases referred to four main hospitals over a three-year period (1997-2000) were included. More poisoning cases were females (55.5%) than males (45.5%) but the proportional mortality for males was greater than for females (65% versus 35%). The greatest proportion of poisonings occurred between the ages of 16 and 25 years. Most frequent was intentional poisoning, followed by accidental and occupational poisoning. Medicines were the most common cause, followed by chemicals such as pesticides. Poisoning by opiates, aluminium or zinc phosphide, rodenticides, petroleum and ethanol intoxication was also observed. Pesticide poisoning was most frequently fatal. [Journal Article; In English; Egypt]

44. MOHANTY KC and DAS SR (1987). **IN-VITRO TOXICITY OF ERYTHRINA-INDICA EXTRACTS ON MELOIDOGYNE-INCOGNITA.** *INDIAN J PLANT PROT;* 15: 172-173.

Chem Codes: Chemical of Concern: ZNP; Rejection Code: BIOLOGICAL TOXICANT.

BIOSIS COPYRIGHT: BIOL ABS. RRM NEMATICIDE Biochemistry/ Biophysics/ Plants/Chemistry/ Arachnida/ Insects/ Nematoda/ Parasites/ Plant Diseases/ Plant Diseases/ Preventive Medicine/ Herbicides/ Pest Control/ Pesticides/ Anatomy, Comparative/ Animal/ Helminths/Physiology/ Physiology, Comparative/ Pathology/ Legumes/ Nematoda

45. Moskowitz, P. D., Fthenakis, V. M., and Lee, J. C. (**Potential Health And Safety Hazards Associated With The Production Of Cadmium Telluride, Copper Indium Diselenide, And Zinc Phosphide Photovoltaic Cells.**

Chem Codes: Chemical of Concern: ZnP Cu; Rejection Code: HUMAN HEALTH.
cadmium telluride solar cells/ copper selenide solar cells/ zinc phosphide solar cells/ occupational safety and health/ toxic substancestd3: in large-scale manufacture of cadmium telluride, copper indium diselenide, and zinc phosphide photovoltaic cells, the materials and equipment used may present potential health and safety hazards to workers and the public. these hazards were identified by reviewing data on process materials, availability of control technology, biomedical effects, and health and environmental standards. quantitative estimates of material inputs and outputs, and control technology costs for selected processes were based on preliminary engineering designs for hypothetical 10-mwp/yr photovoltaic cell production facilities. in the fabrication of these devices, unusually large quantities of some toxic gases may be used; large demands for phosphine and hydrogen selenide are of special concern. because projected usage of these materials is much larger than the current one, a thorough evaluation of engineering controls will be needed before the technologies are commercialized. these materials could also present occupational health hazards. some management options to reduce occupational exposures to these materials are presented. although specific federal and state regulations have not been promulgated for emissions from the photovoltaic industry, prudent engineering practice should be applied to all waste streams - solid, atmospheric, or liquid - containing toxic pollutants to limit discharges of these materials. control costs for most atmospheric waste streams should not be large (<0.01 cent per watt); for phosphine, however, costs are potentially much larger (4.4 cents per watt). some processes may also produce large quantities of solid waste defined as toxic or hazardous under us environmental protection agency guidelines. disposal costs for these materials are presented. (era citation 11:005047). Department of Energy, Washington, DC.

46. Murphy, Michael J (2002). **Rodenticides.** *The Veterinary Clinics Of North America. Small Animal Practice* 32: 469-484, viii.

Chem Codes: Chemical of Concern: BML,ZNP,CLC; Rejection Code: NO TOX DATA.
Rodenticides are second only to insecticides in the prevalence of pesticide exposure. Hundreds of rodenticide products currently exist, yet only a handful of them are involved in most toxicoses of companion animals. The most commonly reported toxicoses in the United States are those caused by anticoagulant rodenticides, bromethalin, cholecalciferol, strychnine, and zinc phosphide. The pathophysiologic findings, diagnosis, and treatment of each of these five rodenticides are discussed. [Journal Article, Review, Review, Tutorial; 97 Refs; In English; United States]

47. Patel, R. K., Dubey, O. P., and Awasthi, A. K. (1992). **Soybean.** *In: I.Prakash and P.K.Ghosh (Eds.), Rodents in Indian Agriculture, Volume 1, State of the Art, Sci.Publ., Jodhpur, India* 265-267.

Chem Codes: Chemical of Concern: ZnP; Rejection Code: REFS CHECKED/REVIEW.

48. Prakash, I. and Mathur, R. P. (1992). **Acute Rodenticides.** *In: I.Prakash and P.K.Ghosh (Eds.), Rodents in Indian Agriculture, Volume 1, State of the Art, Sci.Publ., Jodhpur, India* 497-515.

Chem Codes: EcoReference No.: 75528
Chemical of Concern: ZnP,RSG,Ba,As,STCH,TI,NaFA,Urea; Rejection Code: REVIEW.

49. Ramesh, P. (1992). **The Short-Tailed Mole-Rat Nesokia indica Gray.** *In: I.Prakash and P.K.Ghosh (Eds.), Rodents in Indian Agriculture, Volume 1, State of the Art, Sci.Publ., Jodhpur, India* 165-171.

Chem Codes: Chemical of Concern: ZnP; Rejection Code: REVIEW/REFS CHECKED.

50. Rao, A. M. K. M. (1992). **Integrated Rodent Management.** *In: I.Prakash and P.K.Ghosh (Eds.), Rodents in Indian Agriculture, Volume 1, State of the Art, Sci.Publ., Jodhpur, India* 651-667.

Chem Codes: EcoReference No.: 75527
Chemical of Concern: BDL,ZnP; Rejection Code: REVIEW.

51. Saxena, Y. (1993). **Histopathological and Biochemical Impact of Zinc Phosphide on Rattus rattus Rufescens.** *In: V.P.Agrawal, S.A.H.Abidi, and G.P.Verma (Eds.), Seminar on Environmental Impact on Aquatic & Terrestiral Habitats, Dec.1991, Berhampur, India* 163-170.

Chem Codes: EcoReference No.: 53913
Chemical of Concern: Zn,ZnP; Rejection Code: REFS CHECKED/REVIEW.

52. SINGH, S. (1986). **PLANT PROTECTION IN INDIA.** *SEMINAR ON PLANT PROTECTION IN THE YEAR 2000 AD, NEW DELHI, INDIA, DEC. 20-22, 1984. PROC INDIAN NATL SCI ACAD PART B BIOL SCI; 52 (1). 1986. 1-9. AB - BIOSIS COPYRIGHT: BIOL ABS. RRM INSECT PESTS PLANT DISEASES PESTICIDES*.

Chem Codes: Chemical of Concern: DMT,WFN,ZNP; Rejection Code: NO TOX DATA.
Congresses/ Biology/ Biochemistry/ Plants/Growth & Development/ Soil/ Plant Diseases/ Preventive Medicine/ Herbicides/ Pest Control/ Pesticides/ Arachnida/ Entomology/Economics/ Insecticides/ Pest Control/ Pesticides

53. Soldatenkova, N. A., Prilutskaya, L. L., and Agzamova, G. S. (1987). **Polarographic Determination Of Copper Phosphide And Zinc Phosphide In The Air.** 0: 53-55.

Chem Codes: Chemical of Concern: ZnP Cu; Rejection Code: NO SPECIES.
biochemical methods-minerals/ biochemical studies-minerals/ biophysics-general biophysical techniques/ toxicology-environmental and industrial toxicology/ public health: environmental health-air, water and soil pollution biosis copyright: biol abs. rrm

54. Srivastava, D. C. (1992). **Sugarcane.** *In: I.Prakash and P.K.Ghosh (Eds.), Rodents in Indian Agriculture, Volume 1, State of the Art, Sci.Publ., Jodhpur, India* 231-248.

Chem Codes: EcoReference No.: 75523
Chemical of Concern: BDF,BDL,ZnP,WFN; Rejection Code: REVIEW.

55. Sterner, R. T. (1999). **Pre-baiting for increased acceptance of zinc phosphide baits by voles: An assessment technique.** *Pesticide Science* 55: 553-557.

Chem Codes: Chemical of Concern: ZnP; Rejection Code: NO TOX DATA.
0031-613X. During a product-performance test of 2% zinc phosphide (Zn inferior 3P inferior 2) steam-rolled-oat groats (11.2 kg ha superior - superior 1) to control voles (Microtus spp) in alfalfa (Medicago sativa), randomly located, brushed-dirt plots were used to assess broadcast distribution and removal/acceptance of placebo particles. Results showed that the Spyker registered trade mark sign Model-75 Spreaders were calibrated adequately, with placebo baits broadcast uniformly onto plots [x horizontal bar plus-or-minus SD=3.5 (plus-or-minus 2.7) groats 930 cm superior - superior 1]. Acceptance of the placebos by voles increased rapidly - 28% and 60% by 24 h and 48 h post-broadcast, respectively. Analyses of variance confirmed the uniformity (non-significance) of particles broadcast among enclosures/plots and the significantly greater removal/acceptance of placebos across days. This technique affords an objective decision-making tool for applicators and researchers applying Zn inferior 3P inferior 2 baits in field situations an objective technique of assessing pre-bait acceptance that should improve efficacy of the rodenticide

56. STERNER RT and RAMEY CA (1995). **Deterioration of lecithin-adhered zinc phosphide baits in alfalfa.** *INTERNATIONAL BIODETERIORATION & BIODEGRADATION;* 36: 65-71.

Chem Codes: Chemical of Concern: ZNP; Rejection Code: FATE.
BIOSIS COPYRIGHT: BIOL ABS. A 2.00 (| 0.36)% zinc phosphide (Zn_3P_2, CAS no. 1314-84-7) steamrolled-oat (SRO) groats bait containing 1.04% lecithin vehicle was broadcast in alfalfa (Medicago sativa). Samples of bait were collected immediately after broadcast, and 1, 7 and 14 days after exposure to existent agronomic and climatological conditions. Analyses of respective samples yielded 1.80 (| 0.36)%, 1.18 (| 0.04)%, 1.20 (| 0.11)%, and | 0.26 (| 0.05)% Zn_3P_2. Aely due to mechanical broadcast;after exposure to pH 6.0 soil and 0.05 cm rainfall; and \ 87% loss of Zn_3P_2 occurred by day 14 following an additional 0.96 cm rainfall. Mechanical, precipitation and soil-acidity factors are viewed to reduce the concentration of Zn_3P_2-grain baits in crop situations. Lecithin-adhered Zn_3P_2 baits showed a relatively rapid decline in concentration of active ingredient (A.I.) after broadcast and exposure to slight moisture - a useful attribute of these baits in areas where hazards to nontarget wildlife are of conc Climate/ Ecology/ Meteorological Factors/ Animals/ Ecology/ Biochemistry/ Animal Feed/ Plants/Growth & Development/ Soil/ Soil/ Herbicides/ Pest Control/ Pesticides/ Legumes/ Microtinae/ Muridae/ Sciuridae

57. Subiah, K. S. and Mathur, R. P. (1992). **Andamans with Special Reference to Oil Palm Plantations.** *In: I.Prakash and P.K.Ghosh (Eds.), Rodents in Indian Agriculture, Volume 1, State of the Art, Sci.Publ., Jodhpur, India* 343-356.

Chem Codes: Chemical of Concern: BDL,WFN,ZNP; Rejection Code: REFS CHECKED/REVIEW.

Zinc Phosphide Refresh September 2010
Papers that Were Accepted

Accepted for Ecotox and OPP

Bhardwaj, D., Siddiqui, J. A., and Khan, J. A. (1984). Mitigating Poison and Bait-Shyness Developed by Wild Rats (Rattus rattus L.) II. Use of Boiled Foods and Oily Cereal Mixtures. *Z. Angew. Zool.* 71: 339-346.

EcoReference No.: 85703
Chemical of Concern: ZnP; Habitat: T; Effect Codes: BEH; Code: LITE EVAL CODED (ZnP).

Byers, R. E. (1978). Performance of Rodenticides for the Control of Pine Voles in Orchards. *J. Am. Soc. Hortic. Sci.* 103: 65-69.

EcoReference No.: 69367
Chemical of Concern: BDF,BDL,CPC,DPC,EN,ZnP; Habitat: T; Effect Codes: BEH,MOR,POP; Code: LITE EVAL CODED (BDF,BDL,CPC,DPC,EN,ZnP), TARGET (BDF,BDL,CPC,DPC,ZnP).

Hudson, R. H., Tucker, R. K., and Haegele, M. A. (1984). Handbook of Toxicity of Pesticides to Wildlife. *Resour.Publ.No.153, Fish Wildl.Serv., 2nd Edition, U.S.D.I., Washington, DC* 90 p.

EcoReference No.: 50386
Chemical of Concern: 24D,24DXY,4AP,ACL,ACP,ACR,ADC,AMTL,AND,ANZ,ATN,ATZ,AZ,BFL,BTY,CBF,CBL,CHD,CMPH,CPP,CPY,CPYM,CQTC,CZE,Captan,DBN,DCF,DCNA,DCTP,DDT,DDVP,DEF,DEM,DFZ,DINO,DLD,DMDP,DMT,DQTBr,DS,DU,DXN,DZ,EDT,EN,EP,EPRN,ES,ETN,FBOX,FMP,FMU,FNF,FNT,FNTH,FO,Folpet,HCCH,HPT,MCB,MDT,MLN,MOM,MP,MRX,MTM,MTPN,MVP,MXC,NaDPA,NaFA,Nabam,Naled,OXD,PCL,PCP,PMA,PNB,PPHD,PPX,PQT,PRN,PRT,PSM,PYT,RSM,RTN,STAR,STCH,STCHS,T1,TBF,TCDD,TCF,TFM,TFN,THM,TMP,TVP,TVPM,TXP,TZL,VCZ,Zineb,ZnP; Habitat: T; Effect Codes: MOR; Code: LITE EVAL CODED (24D,24DXY,ACL,ACP,ACR,ADC,ATN,ATZ,AZ,BTY,CBF,CBL,CMPH,CPP,CPY,CPYM,CQTC,Captan,DBN,DCF,DCNA,DCTP,DDVP,DFZ,DINO,DMDP,DMT,DQTBr,DS,DU,DZ,EP,ES,FBOX,FMP,FNT,MCB,MDT,MLN,MOM,MP,MTM,MVP,NaDPA,Naled,PPX,PQT,PRT,PSM,RTN,STCH,STCHS,TBF,TCF,TFN,TMP,TVPM,VCZ,ZnP), NO EFED CHEM (DBN), OK (4AP,AMTL,AND,ANZ,BFL,CHD,CZE,DDT,DEF,DEM,DLD,DXN,EDT,EN,EPRN,ETN,FMU,FNF,FNTH,Folpet,HCCH,HPT,MRX,MTPN,MXC,NaFA,Nabam,OXD,PCL,PCP,PMA,PNB,PPHD,PRN,PYT,RSM,STAR,TCDD,TFM,THM,TVP,TXP,TZL,Zineb).

Hygnstrom, S. E., VerCauteren, K. C., Hines, R. A., and Mansfield, C. W. (2000). Efficacy of In-Furrow Zinc Phosphide Pellets for Controlling Rodent Damage in No-Till Corn. *Int. Biodeterior. Biodegrad.* 45: 215-222.

EcoReference No.: 86197
Chemical of Concern: ZnP; Habitat: T; Effect Codes: POP; Code: LITE EVAL CODED (ZnP).

Johns, B. E. and Thompson, R. D. (1979). Acute Toxicant Identification in Whole Bodies and Baits Without Chemical Analysis. *In: E.E.Kenaga (Ed.), Avian and Mammalian Wildl.Toxicol., ASTM STP 693(Am.Soci.for Test.and Mater.)* 80-88.

EcoReference No.: 37330
Chemical of Concern: 4AP,DPC,NaFA,STAR,ZnP; Habitat: T; Effect Codes: MOR; Code: LITE EVAL CODED (4AP,DPC,NaFA,STAR,ZnP).

Kumari, S. and Prakash, I. (1984). Relative Efficacy of Male and Female Conspecific Urine in Masking Shyness Behaviour in Indian Gerbil, Tatera indica. *Proc. Indian Acad. Sci. Anim. Sci.* 93: 431-436.

EcoReference No.: 79216
Chemical of Concern: ZnP; Habitat: T; Effect Codes: BEH; Code: LITE EVAL CODED (ZnP).

Uresk, D. W. and Schenbeck, G. L. (1987). Effect of Zinc Phosphide Rodenticide on Prairie Dog Colony Expansion as Determined from Aerial Photography. *Prairie Nat.* 19: 57-61.

EcoReference No.: 79133
Chemical of Concern: ZnP; Habitat: T; Effect Codes: POP; Code: LITE EVAL CODED (ZnP).

Witmer, G. W., Eisemann, J. D., Primus, T. M., O'Hare, J., Perry, K. R., Elsey, R. M., and Trosclair, P. L. (2010). Assessing Potential Risk to Alligators, Alligator mississippiensis, From Nutria Control With Zinc Phosphide Rodenticide Baits. *Bull. Environ. Contam. Toxicol.* 84: 698-702.

EcoReference No.: 150403
Chemical of Concern: ZnP; Habitat: T; Effect Codes: ACC,MOR; Code: LITE EVAL CODED (ZnP).

Zinc Phosphide Refresh
Papers that Were not Accepted

Acceptable for EcoTox but not OPP

Ahmad, N., Sheikher, C., and Guraya, S. S. (1988). Evaluation of Weather-Proof Baits for the Control of Field Rodents in Rainy Season. *Indian J. Agric. Sci.* 58: 297-298 .

EcoReference No.: 75476
Chemical of Concern: BDL,ZnP; Habitat: T; Effect Codes: MOR; Code: NO ENDPOINT (BDL,ZnP).

Baskaran, J., Kanakasabai, R., and Neelanarayanan, P. (1995). Evaluation of Two Rodenticides in the Paddy Fields During Samba and Thaladi Seasons. *J. Exp. Biol.* 33: 113-121.

EcoReference No.: 40368
Chemical of Concern: BDL,ZnP; Habitat: T; Effect Codes: POP; Code: NO ENDPOINT (BDL,ZnP).

Bell, H. B. and Dimmik, R. W. (1975). Hazards to Predators Feeding on Prairie Voles Killed with Zinc Phosphide. *J. Wildl. Manag.* 39: 816-819.

EcoReference No.: 35035
Chemical of Concern: Zn,ZnP; Habitat: T; Effect Codes: BEH,MOR; Code: NO ENDPOINT (Zn,ZnP).

Bhat, S. K. and Mathew, D. N. (1981). Comparative Toxicity of Two Acute Rodenticides to the Western Ghats Squirrel, (Funambulus tristriatus Waterhouse). *Int. Pest Control* 23: 132.

EcoReference No.: 35834
Chemical of Concern: ZnP; Habitat: T; Effect Codes: MOR; Code: NO CONTROL (ZnP).

Bhatnagar, R. K., Palta, R. K., Bhandari, J. K., and Saxena, P. N. (1991). Responses in Nesokia indica Gray to Zinc Phosphide Baits. *J. Entomol. Res. (New Delhi)* 15: 149-150.

EcoReference No.: 75563
Chemical of Concern: ZnP; Habitat: T; Effect Codes: BEH,MOR; Code: NO CONTROL (ZnP), NO ENDPOINT (ZnP).

Blaxland, J. D. and Gordon, R. F. (1945). Zinc Phosphide Poisoning in Poultry. *Vet. J.* 101: 108-110.

EcoReference No.: 150631
Chemical of Concern: ZnP; Habitat: T; Effect Codes: MOR,PHY; Code: NO CONTROL (ZnP), NO ENDPOINT (ZnP).

Brown, L. E., Fisher, P., Wright, G., and Booth, L. (2007). Measuring Degradation of Zinc Phosphide Residues in Possum Stomach Contents. *Bull. Environ. Contam. Toxicol.* 79: 459-461.

EcoReference No.: 114610
Chemical of Concern: ZnP; Habitat: T; Effect Codes: ACC; Code: NO ENDPOINT (ZnP).

Dundjerski, Z. (1988). Outbreaks of Arvicola terrestris in Rice Fields in Yugoslavia. *Bull. OEPP (Org. Eur. Medit. Prot. Plant)* 18: 445-452.

EcoReference No.: 75956
Chemical of Concern: ZnP; Habitat: T; Effect Codes: POP; Code: NO CONTROL (ZnP), NO

ENDPOINT (ZnP).

El-Bahrawy, A. A. F., Vijver, M. G., and De Snoo, G. R. (2007). Threats and Control of the Brown Necked Ravens (Corvus ruficollis) in Egypt. *Commun. Agric. Appl. Biol. Sci.* 72: 221-232.

EcoReference No.: 110945
Chemical of Concern: BDF,MOM,ZnP; Habitat: T; Effect Codes: POP; Code: NO ENDPOINT (BDF,MOM,ZnP).

Gill, J. E. and Redfern, R. (1979). Laboratory Tests of Seven Rodenticides for the Control of Mastomys natalensis. *J. Hyg.* 83: 345-352.

EcoReference No.: 75717
Chemical of Concern: BDF,BDL,CLC,WFN,ZnP; Habitat: T; Effect Codes: MOR; Code: NO CONTROL (BDF,BDL,CLC,WFN,ZnP).

Greaves, J. H., Choudry, M. A., and Khan, A. A. (1976). Pilot Rodent Control Studies in Rice Fields in Sind, Using Five Rodenticides. *Agro-Ecosystems* 3: 119, 130 (doi: DOI: 10.1016/0304-3746(76)90111-6).

EcoReference No.: 118331
Chemical of Concern: NaCN,NaFA,ZnP; Habitat: T; Effect Codes: BEH; Code: NO ENDPOINT (NaCN,NaFA,ZnP), TARGET (NaCN,NaFA,ZnP).

Higuchi, S. (1981). Vole Control by Rodenticides in Afforested Land. *Rev. Plant Prot. Res.* 14: 169-186.

EcoReference No.: 75999
Chemical of Concern: ZnP; Habitat: T; Effect Codes: POP; Code: NO ENDPOINT (ZnP).

Hunt, E. G. and Keith, J. O. (1962). Pesticide-Wildlife Investigations in California - 1962. *Proc. 2nd Annu. Conf. on the Use of Agricultural Chemicals in California - a Summary of the Problems and Progress in Solving Them, Univ. of California, Davis, CA* 29 p.

EcoReference No.: 18105
Chemical of Concern: DDT,DLD,EN,MLN,NaFA,STCH,TXP,ZnP; Habitat: AT; Effect Codes: ACC,MOR,POP; Code: NO CONTROL (DDT,NaFA,STCH,ZnP), NO ENDPOINT (DDT,DLD,EN,MLN,TXP).

Hygnstrom, S. E., McDonald, P. M., and Virchow, D. R. (1998). Efficacy of Three Formulations of Zinc Phosphide for Managing Black-Tailed Prairie Dogs. *Int. Biodeterior. Biodegrad.* 42: 147-152.

EcoReference No.: 75953
Chemical of Concern: ZnP; Habitat: T; Effect Codes: POP; Code: NO ENDPOINT (ZnP).

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EcoReference No.: 58906
Chemical of Concern: DDT,PHSL,ZnP; Habitat: T; Effect Codes: BEH,CEL,GRO,MOR,PHY,REP; Code: NO CONTROL (PHSL,ZnP), OK (DDT).

Janda, J. and Bosseova, M. (1970). The Toxic Effect of Zinc Phosphide Baits on Partridges and Pheasants. *J. Wildl. Manag.* 34: 220-223.

EcoReference No.: 150781
Chemical of Concern: ZnP; Habitat: T; Effect Codes: MOR; Code: NO CONTROL (ZnP).

Johnston, J. J., Nolte, D. L., Kimball, B. A., Perry, K. R., and Hurley, J. C. (2005). Increasing Acceptance and Efficacy of Zinc Phosphide Rodenticide Baits via Modification of the Carbohydrate Profile. *Crop Prot.* 24: 381-385.

EcoReference No.: 87349
Chemical of Concern: LEC,ZnP; Habitat: T; Effect Codes: BEH,MOR; Code: NO CONTROL (ZnP), OK (LEC).

Keith, J. O. (1966). Insecticide Contaminations in Wetland Habitats and Their Effects on Fish-Eating Birds. *J. Appl. Ecol.* 3: 71-85.

EcoReference No.: 96802
Chemical of Concern: 24D,24DXY,AND,CBL,DDT,DEM,DLD,EN,EPRN,ES,HPT,PRN,TXP,ZnP; Habitat: T; Effect Codes: MOR,PHY,POP; Code: NO CONTROL (24D,24DXY,AND,CBL,DDT,DEM,DLD,EN,EPRN,ES,HPT,PRN,TXP,ZnP), NO ENDPOINT (24D,24DXY,AND,CBL,DDT,DEM,DLD,EN,EPRN,ES,HPT,PRN,TXP,ZnP).

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EcoReference No.: 108789
Chemical of Concern: BML,ZnP; Habitat: T; Effect Codes: POP; Code: NO ENDPOINT (BML,ZnP).

Khan, A. A. (1981). Field Trial of Some Rodenticides Against the Collared Pika, Ochotona rufescens in Apple Orchard. *Int. Pest Control* 12-13.

EcoReference No.: 50926
Chemical of Concern: BDF,Tl,ZnP; Habitat: T; Effect Codes: BEH; Code: NO ENDPOINT (BDF,Tl,ZnP).

Khan, A. A. and Ahmad, M. (1991). Field Efficacy of the Second Generation Anticoagulants, Zinc Phosphide and Bromethalin Against Meriones hurrianae Jerdon. *Indian J. Plant Prot.* 19: 43-48.

EcoReference No.: 75433
Chemical of Concern: BDF,BDL,BML,ZnP; Habitat: T; Effect Codes: BEH,MOR,POP; Code: NO ENDPOINT (BDF,BDL,BML,ZnP).

Malhi, C. S., Chopra, G., and Parshad, V. R. (1986). Poison Baiting of Rodents in Wheat Triticum aestivum. *Indian J. Agric. Sci.* 56: 609-611.

EcoReference No.: 75711
Chemical of Concern: BDF,BML,ZnP; Habitat: T; Effect Codes: POP; Code: NO ENDPOINT (BDF,BML,ZnP).

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EcoReference No.: 101322
Chemical of Concern: CPY,STCH,ZnP; Habitat: T; Effect Codes: POP; Code: NO ENDPOINT (CPY,STCH,ZnP), TARGET (STCH,ZnP).

Parshad, V. R., Ahmad, N., and Chopra, G. (1987). Deterioration of Poultry Farm Environment by Commensal Rodents and Their Control. *Int. Biodeterior.* 23: 29-46.

EcoReference No.: 75546
Chemical of Concern: BDF,ZnP; Habitat: T; Effect Codes: BEH,MOR; Code: NO CONTROL

(BDF,ZnP).

Parshad, V. R. and Kochar, J. K. (1995). Potential of Three Rodenticides to Induce Conditioned Aversion to Their Baits in the Indian Mole Rat, Bandicota bengalensis. *Appl. Anim. Behav. Sci.* 45: 267-276.

EcoReference No.: 75654
Chemical of Concern: BDF,BDL,ZnP; Habitat: T; Effect Codes: BEH; Code: LITE EVAL CODED (BDF), NO ENDPOINT (BDL,ZnP), TARGET (BDF,BDL,ZnP).

Parshad, V. R. and Malhi, C. S. (1995). Comparative Efficacy of Two Methods of Delivering an Anticoagulant Rodenticide to Three Species of South Asian Rodents. *Int. Biodeterior. Biodegrad.* 36: 89-102.

EcoReference No.: 75952
Chemical of Concern: ZnP; Habitat: T; Effect Codes: BEH,MOR,POP; Code: NO ENDPOINT (ZnP).

Parshad, V. R., Malhi, C. S., Ahmad, N., and Gupta, B. (1987). Rodent Damage and Control in Peanut Fields in India. *Peanut Sci.* 14: 4-6.

EcoReference No.: 79138
Chemical of Concern: BDF,BDL,ZnP; Habitat: T; Effect Codes: POP; Code: NO ENDPOINT (BDF,BDL,ZnP), TARGET (BDF,BDL,ZnP).

Pervez, A., Ahmad, S. M., Waqar, S., and Rizvi, A. (1998). Comparative Efficacy of Bromadiolone, Cholecalciferol and Zinc Phosphide Against Short-Tailed Mole Rat Nesokia indica in Captivity. *Turk. J. Zool.* 22: 137-140.

EcoReference No.: 79137
Chemical of Concern: BDL,CLC,ZnP; Habitat: T; Effect Codes: BEH; Code: NO ENDPOINT (ZnP), OK (BDL,CLC).

Poche, R. M. and Mian, M. Y. (1986). Effectiveness of Four Rodenticides in Deepwater Rice. *Z. Angew. Zool.* 73: 37-48.

EcoReference No.: 75481
Chemical of Concern: BDF,ZnP; Habitat: T; Effect Codes: POP; Code: NO ENDPOINT (BDF,ZnP).

Prakash, S., Kumar, S., Veer, V., Gopalan, N., Purnanand, Pandey, K. S., and Rao, K. M. (2003). Laboratory Evaluation of Four Rodenticides Admixed in a Cereal-Based Bait Against Commensal Rat, Rattus rattus (L.) (Rodentia: Muridae : Murinae). *J. Stored Prod. Res.* 39: 141-147.

EcoReference No.: 90246
Chemical of Concern: DBAC,DFT,DNB,ZnP; Habitat: T; Effect Codes: BEH,MOR; Code: NO CONTROL (DBAC,DFT,DNB,ZnP), TARGET (DFT,ZnP).

Proulx, G. (1998). Evaluation of Strychnine and Zinc Phosphide Baits to Control Northern Pocket Gophers (Thomomys talpoides) in Alfalfa Fields in Alberta, Canada. *Crop Prot.* 17: 135-138.

EcoReference No.: 75465
Chemical of Concern: STCH,ZnP; Habitat: T; Effect Codes: POP; Code: NO ENDPOINT (STCH,ZnP).

Ramesh, P. (1987). Two Baiting Methods for Nesokia indica Gray, Their Relative Efficacy and Economics. *Indian J. Plant Prot.* 15: 174-175.

EcoReference No.: 75477
Chemical of Concern: ZnP; Habitat: T; Effect Codes: MOR; Code: NO CONTROL (ZnP), NO ENDPOINT (ZnP).

Ramey, C. A., Bourassa, J. B., and Brooks, J. E. (2000). Potential Risks to Ring-Necked Pheasants in California Agricultural Areas Using Zinc Phosphide. *Int. Biodeterior. Biodegrad.* 45: 223-230.

EcoReference No.: 75143
Chemical of Concern: ZnP; Habitat: T; Effect Codes: MOR; Code: NO ENDPOINT (ZnP).

Robertson, A. J., Campbell, J. G., and Graves, D. N. (1945). Experimental Zinc Phosphide Poisoning in Fowls. *J. Comp. Path. Ther.* 55: 290-300.

EcoReference No.: 150642
Chemical of Concern: ZnP; Habitat: T; Effect Codes: MOR; Code: NO CONTROL (ZnP).

Rowe, F. P., Swinney, T., and Bradfield, A. (1974). Field Trials of the Rodenticide 5-p-Chlorophenyl Silatrane Against Wild House Mice (Mus musculus L.). *J. Hyg. Chem. (Eisei Kagaku)* 73: 49-52.

EcoReference No.: 150507
Chemical of Concern: ZnP; Habitat: T; Effect Codes: BEH; Code: NO ENDPOINT (ZnP), TARGET (ZnP).

Sheikher, C. and Jain, S. D. (1996). Mode of Application and Performance of Rodenticides in Vegetable Crops. *Indian J. Agric. Sci.* 66: 437-440.

EcoReference No.: 75720
Chemical of Concern: BDL,CLC,ZnP; Habitat: T; Effect Codes: POP; Code: NO ENDPOINT (BDL,CLC,ZnP).

Shumake, S. A., Hakim, A. A., and Gaddis, S. E. (2002). Carbon Disulfide Effects on Pre-Baited vs. Non-Pre-Baited Rats Exposed to Low Dosage Zinc Phosphide Rodenticide Bait. *Crop Prot.* 21: 545-550.

EcoReference No.: 75542
Chemical of Concern: CBNDS,ZnP; Habitat: T; Effect Codes: BEH,MOR; Code: LITE EVAL CODED (CBNDS), NO CONTROL (ZnP), TARGET (ZnP) .

Soni, G. R. and Prakash, I. (1988). Mitigation of Poison Shyness in Desert Gerbil by Adding Conspecific Sebum of Ventral Scent Marking Gland and Urine in Poison Baits. *Indian J. Exp. Biol.* 26: 476-478.

EcoReference No.: 150629
Chemical of Concern: ZnP; Habitat: T; Effect Codes: BEH; Code: NO CONTROL (ZnP), NO ENDPOINT (ZnP), TARGET (ZnP).

Sterner, R. T., Ramey, C. A., Edge, W. D., Manning, T., Wolff, J. O., and Fagerstone, K. A. (1996). Efficacy of Zinc Phosphide Baits to Control Voles in Alfalfa - an Enclosure Study. *Crop Prot.* 15: 727-734.

EcoReference No.: 75461
Chemical of Concern: ZnP; Habitat: T; Effect Codes: POP; Code: NO ENDPOINT (ZnP).

Sterner, Ray T. and Ramey, C. A. (2002). An Index Technique to Monitor Broadcast Calibration and Bait Pick up, plus Rodent and Avian Sign Under Arid Conditions. *Pest Manag. Sci.* 58: 385-391.

EcoReference No.: 75712
Chemical of Concern: ZnP; Habitat: T; Effect Codes: BEH,POP; Code: NO ENDPOINT (ZnP).

Excluded

Aktas, Y. K. and Ibar, H. (2007). Determination of Cd, Mn, Sb, Ni and Fe in Water Samples After Preconcentration on Bentonite Modified With Trioctyl Phosphine Oxide. *Fresenius Environmental Bulletin [Fresenius*

Environ. Bull.]. 16, 11-13. 2007.
Chem Codes: Abstract: Bentonite modified by the addition of trioctyl phosphine oxide (TO-B) is developed for the separation and preconcentration of Cd, Mn, Sb, Ni and Fe, prior to their determination by flame atomic absorption spectrometry (FAAS). Separation and preconcentration of the above metals have been investigated by a column method using TO-B as adsorbent, and analytes were quantitatively retained at pH 6.0. The elements collected were completely recovered with 1 mol/L of nitric acid. Low blank values of the collector have served as important advantage, and recoveries were 98.3%, 98.6%, 100%, 98.1% and 100% for Cd, Mn, Sb, Ni and Fe, respectively. The relative standard deviations were found to be 1.0-4.0%. Detection limits (3 sigma) were 0.25 mu g L super(-1) for Cd, 0.19 mu g L super(-1) for Mn, 2.3 mu g L super(-1) for Sb, 0.17 mu g L super(-1) for Ni and 0.12 mu g L super(-1) for Fe. The method was practically applied analysing the studied elements in wastewaters. The method can be characterized with fastness, simplicity, quantitative recovery, and high reproducibility.
Descriptors: Article Subject Terms: Cadmium
Descriptors: Oxides
Descriptors: Bentonite
Descriptors: Metals
Descriptors: Adsorbents
Descriptors: Reproducibility
Descriptors: Standard Deviation
Descriptors: Detection Limits
Descriptors: Spectral Analysis
Descriptors: Water analysis
Descriptors: Adsorption
Descriptors: Chemical analysis
Descriptors: Methodology
Classification: SW 3010 Identification of pollutants
Classification: Q5 01502 Methods and instruments
Classification: Q2 02182 Methods and instruments
Classification: EE 50 Water & Wastewater Treatment
Publication Type: Journal Article
Subfile: Environmental Engineering Abstracts; Water Resources Abstracts; ASFA 2: Ocean Technology Policy & Non-Living Resources; ASFA 3: Aquatic Pollution & Environmental Quality
English Code: CHEM METHODS.

English

Al-Azzawi, Mohammad J., Al-Hakkak, Zuhair S., and Al-Adhami, Balqies W (1990). In vitro inhibitory effects of phosphine on human and mouse serum cholinesterase. *Toxicol. Environ. Chem.* 29: 53-6.
Chem Codes: Cholinesterase activity was detd. in mouse and human sera after exposure to different concns. of phosphine gas and for various exposure times. The results showed significant redns. in the enzyme activity of both types of sera. This effect was correlated with both concn. and exposure time. At a short exposure time of 30 min, only the activity of mouse serum cholinesterase was reduced. [on SciFinder (R)] TECSDY 0277-2248 Copyright: Copyright (C) 2010 ACS on SciFinder (R))
Database: CAPLUS
Accession Number: AN 1991:19150
Chemical Abstracts Number: CAN 114:19150
Section Code: 4-3
Section Title: Toxicology
Document Type: Journal
Language: written in English.
Index Terms: Blood serum (cholinesterase of, of humans and lab. animals, phosphine effect on)
CAS Registry Numbers: 7803-51-2 (Phosphine) Role: BIOL (Biological study) (cholinesterase of blood serum of humans and lab. animals response to); 9001-08-5 (Cholinesterase) Role: BIOL (Biological study) (of blood serum, of humans and lab. animals, phosphine effect on) phosphine/ cholinesterase/ serum/ species Code: HUMAN HEALTH.

Anger, Francoise, Paysant, Francois, Brousse, Florent, Le Normand, Isabelle, Develay, Patrick, Gaillard, Yvan, Baert, Alain, Le Gueut, Marie Annick, Pepin, Gilbert, and Anger, Jean-Pierre (2000). Fatal aluminum phosphide poisoning. *J. Anal. Toxicol.* 24: 90-92.

Chem Codes: A 39-yr-old man committed suicide by ingestion of aluminum phosphide, a potent mole pesticide, which was available at the victim's workplace. The judicial authority ordered an autopsy, which ruled out any other cause of death. The victim was discovered 10 days after the ingestion of the pesticide. When aluminum phosphide comes into contact with humidity, it releases large quantities of hydrogen phosphine (PH3), a very toxic gas. Macroscopic examn. during the autopsy revealed a very important asphyxia syndrome with major visceral congestion. Blood, urine, liver, kidney, adrenal, and heart samples were analyzed. Phosphine gas was absent in the blood and urine but present in the brain (94 mL/g), the liver (24 mL/g), and the kidneys (41 mL/g). High levels of phosphorus were found in the blood (76.3 mg/L) and liver (8.22 mg/g). Aluminum concns. were very high in the blood (1.54 mg/L), brain (36 mg/g), and liver (75 mg/g) compared to the usual published values. Microscopic examn. revealed congestion of all the organs studied and obvious asphyxia lesions in the pulmonary parenchyma. All these results confirmed a diagnosis of poisoning by aluminum phosphide. This report points out that this type of poisoning is rare and that hydrogen phosphine is very toxic. The phosphorus and aluminum concns. obsd. and their distribution in the different viscera are discussed in relation to data in the literature. (c) 2000 Preston Publications. [on SciFinder (R)] JATOD3 0146-4760 Copyright: Copyright (C) 2010 ACS on SciFinder (R))

Database: CAPLUS

Accession Number: AN 2000:177248

Chemical Abstracts Number: CAN 132:289710

Section Code: 4-2

Section Title: Toxicology

Document Type: Journal

Language: written in English.

Index Terms: Adrenal gland; Asphyxia; Blood analysis; Brain; Forensic analysis; Heart; Kidney; Liver; Lung; Urine analysis (fatal aluminum phosphide poisoning); Death (suicide; fatal aluminum phosphide poisoning)

CAS Registry Numbers: 7803-51-2 (Phosphine); 20859-73-8 (Aluminum phosphide) Role: ADV (Adverse effect, including toxicity), ANT (Analyte), ANST (Analytical study), BIOL (Biological study) (fatal aluminum phosphide poisoning); 7429-90-5 (Aluminum); 7723-14-0 (Phosphorus) Role: ANT (Analyte), BPR (Biological process), BSU (Biological study, unclassified), ANST (Analytical study), BIOL (Biological study), PROC (Process) (fatal aluminum phosphide poisoning)

Citations: 1) Singh, S; Clin Toxicol 1996, 34(6), 703

Citations: 2) Jayaraman, K; Nature 1991, 353(6343), 377

Citations: 3) Tracqui, A; J Forensic Sci 1995, 40(2), 112

Citations: 4) Chefurka, W; Pestic Biochem Physiol 1976, 6, 350

Citations: 5) Bolter, C; Arch Biochem Biophys 1989, 278(1), 65

Citations: 6) Chugh, S; Indian J Med Res 1996, 104, 190

Citations: 7) Khosla, S; Trop Doct 1992, 22(4), 155

Citations: 8) Chugh, S; Magnesium Res 1997, 10(3), 225

Citations: 9) Singh, U; Indian Pediatr 1997, 34, 650

Citations: 10) Arora, B; J Indian Med Assoc 1995, 93(10), 380

Citations: 11) Chan, L; J Anal Toxicol 1983, 7, 165

Citations: 12) Chugh, S; J Assoc Physicians India 1996, 44(3), 184

Citations: 13) Garry, V; J Lab Clin Med 1993, 122, 739 forensic/ aluminum/ phosphorus/ poisoning/ death

Code: HUMAN HEALTH.

Anon. (1996). Calcium Phosphide. *Dangerous Properties of Industrial Materials Report.* 16, 318-323. 1996.

Chem Codes: Descriptors: Article Subject Terms: Rodenticides

Descriptors: edema

Descriptors: gastrointestinal tract

Descriptors: irritation

Descriptors: lung

Abstract: This monograph of calcium phosphide provides general health hazard data on the chemical,

including symptoms of exposure.
Publication Type: Journal Article
Classification: X 24131 Acute exposure
Subfile: Toxicology Abstracts Code: REVIEW.

English

Bakoss, P., Jarekov&Aacute, J, and Labuda, M. (An Attempt to Control a Natural Focus of Leptospirosis Grippotyphosa by Rodenticide--a Long-Term Study (1977-2004) . *Ann agric environ med. 2007; 14(1):51-6. [Annals of agricultural and environmental medicine : aaem]: Ann Agric Environ Med.*
Chem Codes: ABSTRACT: The purpose of the study was to suppress a known natural focus of field fever exerting an influence on animal hosts of leptospires--small terrestrial mammals (s.t.m.) by rodenticide. After repeated application of the zinc phosphide rodenticide, the s.t.m. were regularly live-trapped and checked for leptospirosis by dark-field microscopy and culture of their renal tissue and serological examination. Isolated leptospira strains were typed by help of rabbit factor sera. The deratization influenced the s.t.m. structure considerably: the proportion of the dominant Microtus arvalis subjects--the main reservoirs of Leptospira kirschneri serovar Grippotyphosa--were gradually and substantially reduced and, contrarily, the percentage of the potential hosts subjects--Clethrionomys glareolus and Apodemus flavicollis--rose decisively over time. Changes in culture and serological positivity for leptospirosis of s.t.m. have also been unregistered. The highest original infestation of M. arvalis have slowly but strongly decreased while that of C. glareolus and A. flavicollis has increased decisively and reached its maximum within the last years of investigation. It is probable that these two animal species have undertaken the leading role in the maintenance of the natural focus of the field fever. In other animal species analogous trends were not registered. Based on these long-term findings, there exists the possibility to suppress only partially and temporarily the epizootic process of leptospirosis in a natural focus that can be desirable in some circumstances (building or free time activities, etc.).
MESH HEADINGS: Animals
MESH HEADINGS: Disease Reservoirs/*veterinary
MESH HEADINGS: Female
MESH HEADINGS: Leptospira/*drug effects
MESH HEADINGS: Leptospirosis/*prevention &amp
MESH HEADINGS: control/transmission
MESH HEADINGS: Longitudinal Studies
MESH HEADINGS: Male
MESH HEADINGS: Mammals/microbiology
MESH HEADINGS: Phosphines/pharmacology
MESH HEADINGS: Population Density
MESH HEADINGS: Population Dynamics
MESH HEADINGS: Rodent Diseases/prevention &amp
MESH HEADINGS: control/transmission
MESH HEADINGS: Rodentia/*microbiology
MESH HEADINGS: Rodenticides/*pharmacology
MESH HEADINGS: Zinc Compounds/pharmacology Code: HUMAN HEALTH.

eng

Barbosda, A., Rosinova, E., Dempsey, J., and Bonin, A. M (1994). Determination of genotoxic and other effects in mice following short term repeated-dose and subchronic inhalation exposure to phosphine. *Environ. Mol. Mutagen.* 24: 81-8.
Chem Codes: This study reports on effects of phosphine inhalation exposure at up to, and exceeding, occupational relevant levels in a subchronic (0.3, 1.0 and 4.5 ppm, 13 wks) and a short term repeated-dose (5.5 ppm, 2 wks) study in both sexes of Balb-c mice. The following end-points were examd.: micronucleus induction in bone marrow, peripheral blood, spleen lymphocytes and skin keratinocytes, mutations at the hypoxanthine-guanine phosphoribosyl transferase locus in lymphocytes, and wt. grain and relative organ wts. (kidneys, lungs, liver, heart, brain and spleen). After subchronic exposure, there was highly significant neg. linear correlation between proportional wt. gain and exposure in both sexes (multiple linear regression,

r = -0.56), with female mice showing a greater effect. Females also showed an increase in relative organ wts. at the highest test dose, in contrast to males where there was a slight decrease. A statistically significant increase in micronucleus frequency was seen in the bone marrow and spleen lymphocytes of both sexes, but only at the highest concn. The short term repeated-dose study revealed a slight decrease in wt. again in both sexes, with a greater effect in females. It is concluded that phosphine is weakly genotoxic in both sexes of mice, and has an effect on wt. gain. However, the weak genotoxic effect may not be biol. significant as it was seen only in the subchronic study and only at the highest test concn. of 4.5 ppm (approaching the LD50). Although such exposure conditions are unlikely to be encountered in an occupational environment, cautions should continue to be exercised in the use of phosphine until more data become available. [on SciFinder (R)] EMMUEG 0893-6692 Copyright: Copyright (C) 2010 ACS on SciFinder (R))
Database: CAPLUS
Accession Number: AN 1994:624094
Chemical Abstracts Number: CAN 121:224094
Section Code: 4-6
Section Title: Toxicology
Document Type: Journal
Language: written in English.
Index Terms: Spleen (phosphine effect on micronucleated erythrocytes from spleen); Organ (phosphine effect on organ wt. in relation to genotoxicity); Animal growth (phosphine effect on wt. gain in relation to genotoxicity); Mutagens (phosphine genotoxicity after inhalation in relation to mutagens); Sex (phosphine genotoxicity and sex role); Mutation (phosphine induction of mutation in spleen lymphocyte); Lymphocyte (spleen; phosphine induction of mutation in spleen lymphocyte); Animal breathing (inhalation, phosphine genotoxicity after inhalation); Skin (keratinocyte, phosphine induction of micronucleus formation in skin keratinocyte); Cell nucleus (micro-, phosphine effect on micronucleus formation in polychromatic erythrocyte in relation to genotoxicity); Health (occupational, phosphine genotoxicity after inhalation in relation to occupational health); Erythrocyte (polychromatic, micronucleated; phosphine effect on micronucleus formation in polychromatic erythrocyte in relation to genotoxicity)
CAS Registry Numbers: 7803-51-2 (Phosphine) Role: ADV (Adverse effect, including toxicity), BIOL (Biological study) (phosphine genotoxicity after inhalation) genotoxicity/ inhalation/ phosphine Code: INHALE.

Barrettto, H. H. C., Inomata, O. N. K., and Lara, W. H. (1984). Determination of Phosphin Residues in Foods. *Revista do Instituto Adolfo Lutz [REV. INST. ADOLFO LUTZ.].* 44, 149-153. 1984.
Chem Codes: Original Title: Determinacao de residuos de fosfina em alimentos
Descriptors: Article Subject Terms: food
Descriptors: pesticide residues
Descriptors: Article Geographic Terms: Brazil
Abstract: Phosphin is an agricultural spray which is much used in Brazil. Because of its toxicity at even low concentrations, 45 samples of various foods were examined by the spectrophotometric procedure. Residues were found in 77.8% of the specimens. Levels ranged from 0.01 to 5.5 mg/kg.
Published 1987.
English; Portuguese
Publication Type: Journal Article
Classification: X 24120 Food, additives & contaminants
Subfile: Toxicology Abstracts Code: NON-ENGLISH.

Portuguese

Bekon, k. A., Le Torc'h, J. M., and Fleurat-Lessard, F. (1988). A Case of Phosphine Tolerance of a Geographical Strain of Tribolium Castaneum (Herbst) (Col.: Tenebrionidae). *Agronomia Tropical [AGRON. TROP.].* 43, 59-63. 1988.
Chem Codes: Original Title: Tolerance a la phosphine chez une race geographique de Tribolium castaneum (Herbst) (Col.: Tenebrionidae)
Descriptors: Article Subject Terms: genetic factors

Descriptors: pesticide resistance
Descriptors: strains
Descriptors: Article Taxonomic Terms: Tenebrionidae
Descriptors: Tribolium castaneum
Abstract: After a test fumigation with phosphine on a strain of Tribolium castaneum (Herbst) from Ivory Coast at a higher dosage than the lethal rate for the sensible strains, a small proportion of adults remained alive. An increase of the fumigant dosage on generations from resistant adults made it possible to obtain lines supporting a dosage of 36 and 48 mg multiplied by h multiplied by l super(-1).
English; Spanish
Publication Type: Journal Article
Classification: Z 05219 Population genetics
Classification: Z 05183 Toxicology & resistance
Subfile: Entomology Abstracts Code: NON-ENGLISH.

Spanish

Bell, C. H (2000). Fumigation in the 21st century. *Crop Prot.* 19: 563-569.
Chem Codes: A review with 39 refs. The last quarter of the 20th century has seen the withdrawal of many compds. formerly used as fumigants. Me bromide, the fumigant with the widest range of applications is scheduled for worldwide withdrawal from routine use as a fumigant in 2015 under the directive of the Montreal Protocol on ozone-depleting substances. Phosphine, the only other commodity fumigant available worldwide, used principally on bulk grain but also on dried fruit, nuts, cocoa, coffee and bagged rice, is currently under regulatory review in the USA and Europe. The prospects for the continued use of fumigants to protect plant and animal health and commodity trading are discussed in the context of mounting pressures on compds. due to registration requirements, atm. emission controls, fears on safety or health grounds, the incidence of resistance, and the need to achieve increasingly high stds. of pest control in international trade. Some recent research results relating to fumigant toxicity and gas application technol. are presented which indicate ways in which the use of some of the few remaining fumigants can be extended in the 21st century. [on SciFinder (R)] CRPTD6 0261-2194 Copyright: Copyright (C) 2010 ACS on SciFinder (R))
Database: CAPLUS
Accession Number: AN 2000:895590
Chemical Abstracts Number: CAN 134:162043
Section Code: 17-0
Section Title: Food and Feed Chemistry
CA Section Cross-References: 5
Document Type: Journal; General Review
Language: written in English.
Index Terms: Insecticides (fumigants; present and future use of); Fumigants (insecticidal; present and future use of); Controlled atmospheres (present and future use for stored products pest control); Fumigants (present and future use of); Insecticide resistance (present and future use of fumigants); Insect (stored product-infesting; present and future use of fumigants against)
CAS Registry Numbers: 74-83-9 (Methyl bromide); 74-90-8 (Hydrogen cyanide); 109-94-4 (Ethyl formate); 124-38-9 (Carbon dioxide); 463-58-1 (Carbonyl sulfide); 2699-79-8 (Sulfuryl fluoride); 7803-51-2 (Phosphine) Role: BUU (Biological use, unclassified), BIOL (Biological study), USES (Uses) (present and future use as fumigant)
Citations: Banks, H; WO 9313659 1993
Citations: Bell, C; J Stored Prod Res 1976, 12, 77
Citations: Bell, C; Pestic Sci 1988, 24, 97
Citations: Bell, C; Pestic Sci 1992, 35, 255
Citations: Bell, C; Proceedings of the International Conference on Controlled Atmosphere and Fumigation in Stored Products 1996 1997, 263
Citations: Bell, C; Proceedings of the Fifth International Working Conference on Stored-products and Protection 1990 1991, 3, 1769
Citations: Bell, C; J Stored Prod Sci 1999, 35, 233
Citations: Champ, B; Report of the FAO global survey of pesticide susceptibility of stored-product pests

1976, 297
Citations: Chaudhry, M; Proceedings of the International Conference on Controlled Atmosphere and Fumigation in Stored Products 1996 1997, 45
Citations: Conyers, S; J Stored Prod Res 1996, 32, 187
Citations: Conyers, S; HGCA Project Report 1996, 125, 122
Citations: Damarli, E; Acta Hortic 1998, 480, 209
Citations: Desmarchelier, J; Stored-Product Protection: Proceedings of the Sixth International Working Conference on Stored-Products and Protection 1994, 78
Citations: Drinkall, M; Proceedings of the Second International Conference on Insect Pests in the Urban Environment 1996, 525
Citations: Fleurat-Lessard, F; Proceedings of the Fourth International Working Conference on Stored-products and Protection 1986 1987, 208
Citations: Hilton, S; Proceedings of the International Conference on Controlled Atmosphere and Fumigation in Stored Products 1996 1997, 409
Citations: Hole, B; J Stored Prod Res 1976, 12, 235
Citations: McGaughey, W; J Stored Prod Res 1989, 25, 201
Citations: Mills, K; Mitt Dtsch Ges Allg Angew Entomol 1983, 4, 98
Citations: Mills, K; GASGA Seminar on Fumigation Technology in Developing Countries 1986, 119
Citations: Nakakita, H; Stored-Product Protection: Proceedings of the Sixth International Working Conference on Stored-Products and Protection 1994, 126
Citations: Newton, J; Proceedings of the Second International Conference on Insect Pests in the Urban Environment 1996, 329
Citations: Noyes, R; Proceedings of the International Conference on Controlled Atmosphere and Fumigation in Stored Products 1996 1997, 359
Citations: Pacheco, I; Levantamento de resistencia a fosfina em insetos de graos armazenados no Estado de Sao Paulo 1990, 20, 144
Citations: Plarre, R; Pflanzenschutzdrinst 1996, 48, 105
Citations: Price, L; J Stored Prod Res 1988, 24, 51
Citations: Prozell, S; Proceedings of the International Conference on Controlled Atmosphere and Fumigation in Stored Products 1996 1997, 325
Citations: Savvidou, N; BCPC Conference, Pests and Diseases 1994, 449
Citations: Soderstrom, E; J Econ Entomol 1984, 77, 457
Citations: Srivastava, J; Bull Grain Technol 1980, 18, 65
Citations: Taylor, R; GASGA Seminar on Fumigation Technology in Developing Countries 1986, 132
Citations: Tyler, P; Int Pest Control 1983, 25(1), 10
Citations: Ulrichs, C; Stored-Product Protection: Proceedings of the Sixth International Working Conference on Stored-Product Protection 1994, 214
Citations: van Graver, S; Annual International Research Conference on Methyl Bromide Alternatives and Emissions Reductions 1994, 97-1
Citations: Winks, R; Proceedings of the International Conference on Controlled Atmosphere and Fumigation in Stored Products 1996 1997, 293
Citations: Winks, R; Proceedings of the Fifth International Working Conference Stored-Products Protection 1990 1991, 2, 935
Citations: Wontner-Smith, T; HGCA Report 1998, 149, 41
Citations: Wontner-Smith, T; HGCA Project Report 1999, 181, 72
Citations: Zettler, J; Proceedings of the Fifth International Working Conference on Stored-Product Protection 1990 1991, 2, 1075 review/ fumigant/ insecticide/ stored/ product/ pest Code: REVIEW.

Bennett, R. N., Mellon, F. A., Botting, N. P., Eagles, J., Rosa, E. A. S., and Williamson, G. (2002). Identification of the Major Glucosinolate (4-Mercaptobutyl Glucosinolate) in Leaves of Eruca Sativa L. (Salad Rocket). *Phytochemistry, 61 (1) pp. 25-30, 2002.*
Chem Codes: Descriptors: Eruca sativa
Descriptors: 4-Mercaptobutyl glucosinolate
Descriptors: 4-Mercaptobutyl isothiocyanate
Descriptors: Bis-(4-Isothiocyanotobutyl) disulfide
Descriptors: LC/MS

Descriptors: MS/MS
Descriptors: GC/MS
Descriptors: NMR
Abstract: The major and structurally unique glucosinolate (GLS) in leaves of Eruca sativa L. (salad rocket) was identified as 4-mercaptobutyl GLS. Both 4-methylthiobutyl GLS and 4-methylsulfinylbutyl GLS were also present, but at lower concentrations. The 4-mercaptobutyl GLS was observed to oxidise under common GLS extraction conditions, generating a disulfide GLS that may be reduced efficiently by tris(2-carboxyethyl) phosphine hydrochloride (TCEP) to reform the parent molecule. The identities of 4-mercaptobutyl GLS and of the corresponding dimeric GLS were confirmed by LC/MS, MS/MS and NMR. Myrosinase treatment of an enriched GLS fraction or of the purified dimer GLS generated a mixture of unique bi-functional disulfides, including bis-(4-isothiocyanatobutyl) disulfide (previously identified elsewhere). TCEP reduction of the purified dimer, followed by myrosinase treatment, yielded only 4-mercaptobutyl ITC. GLS-derived volatiles generated by autolysis of fresh seedlings and true leaves were 4-mercaptobutyl ITC (from the newly identified GLS), 4-methylthiobutyl ITC (from 4-methylthiobutyl GLS) and 4-methylsulfinylbutyl ITC (from 4-methylsulfinyl-butyl GLS); no unusual bi-functional disulfides were found in fresh leaf autolysate. These results led to the conclusion that, in planta, the new GLS must be present as 4-mercaptobutyl GLS and not as the disulfide found after extraction and sample concentration. This new GLS and its isothiocyanate are likely to contribute to the unique odour and flavour of E. sativa.

15 refs.
English
Publication Type: Journal
Publication Type: Article
Country of Publication: United Kingdom
Classification: 92.1.6.1 BIOCHEMISTRY: Secondary Products: Synthesis
Subfile: Plant Science Code: NO TOXICANT.

English

Bhadkambekar, C. A., Swain, K. K., Mukherjee, T., Sarin, R. K., Shukla, S. K., and Kayasth, S. (2008). Zinc as a Marker in Viscera of Suspected Metal Phosphide Poisoning: A Study by Neutron Activation Analysis. *J. Anal. Toxicol.* 32: 760-762.
Chem Codes: Chemical of Concern: ZnP Code: CHEM METHODS.

Bolter, Caroline J. and Chefurka, William (1990). Extramitochondrial release of hydrogen peroxide from insect and mouse liver mitochondria using the respiratory inhibitors phosphine, myxothiazol, and antimycin and spectral analysis of inhibited cytochromes. *Arch. Biochem. Biophys.* 278: 65-72.
Chem Codes: The prodn. of H2O2 by mitochondria isolated from granary weevil (Sitophilus granarius) and mouse liver on exposure to PH3 was studied. Other respiratory inhibitors, antimycin, myxothiazol, and rotenone were used with insect mitochondria. H2O2 was measured spectrophotometrically using yeast cytochrome c peroxidase as an indicator. Insect and mouse liver mitochondria, utilizing endogenous substrate, both produced H2O2 after inhibition by PH3. Insect organelles released 3-fold more H2O2 than did mouse organelles, when exposed to PH3. Prodn. of H2O2 by PH3-treated insect mitochondria increased significantly on addn. of the substrate a-glycerophosphate. Succinate did not enhance H2O2 prodn., however, indicating that the H2O2 did not result from the autoxidn. of ubiquinone. NAD+-linked substrates, malate and pyruvate also had no effect on H2O2 prodn., suggesting that NADH-dehydrogenase was not the source of H2O2. Data obtained using antimycin and myxothiazol, both of which stimulated the release of H2O2 from insect mitochondria, lead to the conclusion that glycerophosphate dehydrogenase is a source of H2O2. The effect of combining PH3, antimycin, and myxothiazol on cytochrome spectra in insect mitochondria was also recorded. PH3 reduced cytochrome c oxidase but none of the other cytochromes in the electron transport chain. There was no movement of electrons to cytochrome b when insect mitochondria were inhibited by PH3. The spectral data show that the inhibitors interact with the respiratory chain in a way that would allow the prodn. of H2O2 from the sites proposed previously. [on SciFinder (R)] ABBIA4 0003-9861 Copyright: Copyright (C) 2010 ACS on SciFinder (R))
Database: CAPLUS
Accession Number: AN 1990:174038

Chemical Abstracts Number: CAN 112:174038
Section Code: 5-4
Section Title: Agrochemical Bioregulators
CA Section Cross-References: 4, 17
Document Type: Journal
Language: written in English.
Index Terms: Liver (from phosphine and other respiratory inhibitors, mitochondrial hydrogen peroxide release in); Mitochondria (hydrogen peroxide release by, of insect and mouse liver, phosphine and other respiratory inhibitors effect on); Sitophilus granarius (hydrogen peroxide release from mitochondria of, phosphine and other respiratory inhibitors effect on)
CAS Registry Numbers: 9075-65-4 Role: BIOL (Biological study) (as source of hydrogen peroxide release from insect and mouse liver mitochondria treated with phosphine); 57-03-4 (a-Glycerophosphate) Role: BIOL (Biological study) (hydrogen peroxide formation by phosphine-treated insect mitochondria increase by); 83-79-4 (Rotenone); 7803-51-2 (Phosphine); 11118-72-2 (Antimycin); 76706-55-3 (Myxothiazol) Role: BIOL (Biological study) (hydrogen peroxide release from insect and mouse liver mitochondria response to); 9001-16-5 (Cytochrome c oxidase) Role: BIOL (Biological study) (phosphine inhibition of, hydrogen peroxide release from insect and mouse mitochondria in relation to); 7722-84-1 (Hydrogen peroxide) Role: BIOL (Biological study) (release of, from insect and mouse liver mitochondria, phosphine and other respiratory inhibitors effect on) hydrogen/ peroxide/ insect/ mammal/ mitochondria/ phosphine Code: IN VITRO.

Brautbar, Nachman and Howard, Jonathan (2002). Phosphine toxicity: Report of two cases and review of the literature. *Toxicol. Ind. Health* 18: 71-75.
Chem Codes: Aluminum phosphide is a commonly used fumigant in the agricultural community. This article reviews the toxic effects of phosphine on the lungs and central nervous system in two workers and reviews the available scientific literature. Education for prevention of exposure and more frequent monitoring for exposure are recommended. [on SciFinder (R)] TIHEEC 0748-2337 Copyright: Copyright (C) 2010 ACS on SciFinder (R))
Database: CAPLUS
Accession Number: AN 2003:610881
Chemical Abstracts Number: CAN 139:295828
Section Code: 59-5
Section Title: Air Pollution and Industrial Hygiene
CA Section Cross-References: 5
Document Type: Journal; General Review
Language: written in English.
Index Terms: Central nervous system; Lung; Occupational health hazard; Occupational safety (two cases and literature on phosphine toxicity)
CAS Registry Numbers: 7803-51-2 (Phosphine); 20859-73-8 (Occupational diseases) Role: ADV (Adverse effect, including toxicity), BIOL (Biological study) (two cases and literature on phosphine toxicity)
Citations: Abdner-Rahman, H; Veterinary and Human Toxicology 1999, 41, 31
Citations: Abdner-Rahman, H; Medicine, Science and the Law 2000, 40, 164
Citations: Burgess, J; Clinical Toxicology 2000, 38, 7
Citations: Ellenhorn, M; Medical toxicology, diagnosis and treatment of human poisoning, second edition
Citations: Khosla, S; Journal of the Association of Physicians of India 1986, 34, 227
Citations: Kurzbauer, H; Neurologia i Neurochirurgia Polska 1987, 20, 415
Citations: Misra, U; Toxicology Letters 1988, 42, 257
Citations: Misra, U; Human Toxicology 1988, 7, 343
Citations: NIOHS Alert; National Occupational Hazard Survey Publication 1999
Citations: Schoonbroodt, D; Acta Clinica Belgica 1992, 47, 280
Citations: Singh, S; Journal of Toxicology Clinical Toxicology 1996, 34, 703
Citations: Siwach, S; Journal of the Association of Physicians of India 1995, 43, 676
Citations: Wilson, R; Journal of the American Medical Association 1982, 244, 148 aluminum/ phosphide/ central/ nervous/ system/ lung/ occupational/ health/ hazard;/ review/ aluminum/ phosphide/ phosphine/ occupational/ health/ hazard Code: HUMAN HEALTH.

Cantrell, F. L. (Look What I Found! Poison Hunting on Ebay. *Clin toxicol (phila). 2005; 43(5):375-9. [Clinical toxicology (philadelphia, pa.)]: Clin Toxicol (Phila).*
Chem Codes: ABSTRACT: BACKGROUND: Many substances deemed too dangerous for commercial use are still available to the general public. The purchase of these substances may potentially place members of the general public at risk for serious poisonings. This study was designed to document the large variety of dangerous poisons readily available on a popular online auction Web site. Methods. Over a 10-month period, the online auction Web site eBays was searched daily using the terms "poison" and "contents." Product name, active ingredients, what form the product is in, amount in container, and relative toxicity rating (Clinical Toxicology of Commercial Products, Gosselin, et al.) were recorded. If available, pictures of the products were saved. RESULTS: One hundred twenty-one individual products were identified. Fifty-five were in solid/tablet form, 37 were powders, and 29 were liquids. Product containers were full for 56 items and partially full for 65. Twenty-four products contained ingredients rated as "supertoxic" and included strychnine (10), arsenic trioxide (8), cyanide (2) and nicotine, pilocarpine, phosphorus, powdered conium maculatum (1 each). Sixty-three products contained "extremely toxic" ingredients including thallium, picrotoxin, soluble barium, antimony, mercury, arsenates, podophyllin, fluoride, zinc phosphide, atropine, scopolamine, and plant extracts of gelsemium, aconite, larkspur, and croton. Twenty-one products contained "very toxic" ingredients including lead, copper, camphor, caffeine, theobromine, creosote, pyrogallic acid, sparteine, quinine, lindane, warfarin, phenol, and digitalis. The remaining 13 were "moderately-slightly toxic." CONCLUSION: While the viability of the labeled ingredients could not be verified, the transportation, handling, and potential utilization of these dangerous poisons by the general public could result in serious poisonings.
MESH HEADINGS: Agrochemicals/chemistry/economics
MESH HEADINGS: Commerce/economics/*methods
MESH HEADINGS: Cosmetics/chemistry/economics
MESH HEADINGS: Dosage Forms
MESH HEADINGS: Group Purchasing/economics/*methods/statistics &amp
MESH HEADINGS: numerical data
MESH HEADINGS: Hazardous Substances
MESH HEADINGS: Household Products/analysis/economics
MESH HEADINGS: *Internet
MESH HEADINGS: Nonprescription Drugs/chemistry/economics
MESH HEADINGS: Pesticides/chemistry/economics
MESH HEADINGS: Poisons/*chemistry
MESH HEADINGS: Risk Management/legislation &amp
MESH HEADINGS: jurisprudence/methods
MESH HEADINGS: Solvents/chemistry
MESH HEADINGS: Time Factors
MESH HEADINGS: United States
MESH HEADINGS: United States Environmental Protection Agency/legislation &amp
MESH HEADINGS: jurisprudence Code: HUMAN HEALTH.

eng

Carey, R. and Warner, R. D. (1994). National Pesticide Telecommunications Network Clarifies Action of Zinc Phosphide. *J. Am. Vet. Med. Assoc.* 205: 1394-1395 PUBL AS 75522.
Chem Codes: Chemical of Concern: ZnP Code: PUBL AS.

Chin, K. L., Mai, X., Meaklim, J., Scollary, G. R., and Leaver, D. D (1992). The interaction of phosphine with hemoglobin and erythrocytes. *Xenobiotica* 22: 599-607.
Chem Codes : Phosphine progressively converts oxyHb to metHb and hemichrome species, with the product formed being time- and concn.-dependent. The reaction of phosphine with oxyHb leads to the formation of phosphite and phosphate. Incubation of rat erythrocytes with various concns. of phosphine results in the progressive uptake of phosphine by the erythrocytes in a temp.-dependent first-order process. Uptake of phosphine by erythrocytes causes crenation, but conversion of oxyHb to metHb and hemichrome could not be demonstrated. [on SciFinder (R)] XENOBH 0049-8254 Copyright: Copyright (C) 2010 ACS

on SciFinder (R))
Database: CAPLUS
Accession Number: AN 1992:442278
Chemical Abstracts Number: CAN 117:42278
Section Code: 4-4
Section Title: Toxicology
Document Type: Journal
Language: written in English.
Index Terms: Phosphates; Phosphites Role: BIOL (Biological study) (as phosphine metabolite in erythrocytes); Hemichromes; Hemoglobins Role: PRP (Properties) (phosphine induction of, in erythrocytes); Erythrocyte (phosphine interaction with); Hemoglobins Role: BIOL (Biological study) (phosphine interaction with); Biological transport (absorption, of phosphine, by erythrocytes)
CAS Registry Numbers: 7803-51-2 (Phosphine) Role: BIOL (Biological study) (Hb and erythrocytes interaction with) phosphine/ erythrocyte/ Hb/ interaction Code: IN VITRO.

Chinnasamy, G. and Rampitsch, C. (2006). Efficient Solubilization Buffers for Two-Dimensional Gel Electrophoresis of Acidic and Basic Proteins Extracted From Wheat Seeds. *Biochimica et Biophysica Acta - Proteins and Proteomics, 1764 (4) pp. 641-644, 2006*.
Chem Codes: Descriptors: Acidic and basic protein
Descriptors: Isoelectric focusing
Descriptors: Protein solubilization
Descriptors: Two-dimensional electrophoresis
Descriptors: Wheat seed
Abstract: Plant tissues are made up of a broad range of proteins with a variety of properties. After extraction, solubilization of a diverse range of plant proteins for efficient proteomic analysis using two-dimensional electrophoresis is a challenging process. We tested the efficiency of 12 solubilization buffers in dissolving acidic and basic proteins extracted from mature seeds of wheat. The buffer containing two chaotropes (urea and thiourea), two detergents (3-[(3-cholamidopropyl) dimethyl-ammonio]-1-propane-sulfonate and N-decyl-N,N-dimethyl-3-ammonio-1-propane-sulfonate), two reducing agents (dithiothreitol and tris (2-carboxyethyl) phosphine hydrochloride) and two types of carrier ampholytes (BioLyte pH 4-6 and pH 3-10) solubilized the most acidic proteins in the pH range between 4 and 7. The buffer made up of urea, thiourea, 3-[(3-cholamidopropyl) dimethyl-ammonio]-1-propane-sulfonate, DeStreak reagent (Amersham Biosciences, Uppsala, Sweden) and immobilized pH gradient buffer, pH 6-11 (Amersham Biosciences) solubilized the most basic proteins in the pH range between 6 and 11. These two buffers produced two-dimensional gels with high resolution, superior quality and maximum number of detectable protein (1425 acidic protein and 897 basic protein) spots. Crown Copyright (copyright) 2005.
14 refs.
English
Publication Type: Journal
Publication Type: Article
Country of Publication: Netherlands
Classification: 92.1.1.6 BIOCHEMISTRY: Molecular Biology: Proteins
Subfile: Plant Science Code: METHODS.

English

Chopra, G. (1992). Poultry Farms. *In: I.Prakash and P.K.Ghosh (Eds.), Rodents in Indian Agriculture, Volume 1, State of the Art, Sci.Publ., Jodhpur, India* 309-330.
Code: REVIEW.

ISBN 81-7233-013-8//

Chopra, G. (1992). Poultry Farms. *In: I.Prakash and P.K.Ghosh (Eds.), Rodents in Indian Agriculture, Volume 1, State of the Art, Sci.Publ., Jodhpur, India* 309-330.
Chem Codes: EcoReference No.: 75529
Chemical of Concern: BDF,BDL,WFN,ZnP Code: REVIEW.

Collins, A. R., Workman, J. P., and Uresk, D. W. (1984). An Economic Analysis of Black-Tailed Prairie Dog (Cynomys ludovicianus) Control. *J. Range Manag.* 37: 358-361.
Chem Codes: Chemical of Concern: ZnP Code: NO CONC.

Daglish, Gregory J. and Pavic, Hervoika (2009). Changes in phosphine sorption in wheat after storage at two temperatures. *Pest Manage. Sci.* 65: 1228-1232.
Chem Codes: Wheat can be stored for many months before being fumigated with phosphine to kill insects, so a study was undertaken to investigate whether the sorptive capacity of wheat changes as it ages. Wheat was stored at 15 or 25 DegC and 55% RH for up to 5.5 mo, and samples were fumigated at intervals to det. sorption. Sealed glass flasks (95% full) were injected with 1.5 mg L-1 of phosphine based on flask vol. Concns. were monitored for 11 days beginning 2 h after injection. Some wheat samples were refumigated after a period of ventilation. Several fumigations of wheat were conducted to det. the pattern of sorption during the first 24 h. Phosphine concn. declined exponentially with time from 2 h after injection. Rate of sorption decreased with time spent in storage at either 15 or 25 DegC and 55% RH. Rate of sorption tended to be lower when wheat was refumigated, but this could be explained by time in storage rather than by refumigation per se. The data from the 24 h fumigations did not fit a simple exponential decay equation. Instead, there was a rapid decline in the first hour, with phosphine concn. falling much more slowly thereafter. The results have implications for phosphine fumigation of insects in stored wheat. Both the time wheat has spent in storage and the temp. at which it has been stored are factors that must be considered when trying to understand the impact of sorption on phosphine concns. in com. fumigations. Copyright (c) The state of Queensland (through the Department of Employment, Economic Development and Innovation) 2009. Published by John Wiley and Sons, Ltd. [on SciFinder (R)] PMSCFC 1526-498X
Copyright: Copyright (C) 2010 ACS on SciFinder (R))
Database: CAPLUS
Accession Number: AN 2009:1250010
Chemical Abstracts Number: CAN 151:569911
Section Code: 17-4
Section Title: Food and Feed Chemistry
CA Section Cross-References: 5
Document Type: Journal
Language: written in English.
Index Terms: Food preservation; Fumigation; Insecticides; Sorption; Triticum aestivum; Wheat (phosphine sorption in wheat after storage); Storage (temp.; phosphine sorption in wheat after storage)
CAS Registry Numbers: 7803-51-2 (Phosphine) Role: FFD (Food or feed use), BIOL (Biological study), USES (Uses) (phosphine sorption in wheat after storage)
Citations: 1) Daglish, G; Pest Manag Sci 2002, 58, 1015
Citations: 2) Collins, P; J Stored Prod Res 2005, 41, 373
Citations: 3) Lorini, I; Pest Manag Sci 2007, 63, 358
Citations: 4) Nayak, M; Pest Manag Sci 2008, 64, 971
Citations: 5) Reed, C; J Stored Prod Res 2000, 36, 263
Citations: 6) Reddy, P; Pest Manag Sci 2007, 63, 96
Citations: 7) Daglish, G; Pest Manag Sci 2008, 64, 513
Citations: 8) Darby, J; Pest Manag Sci 2008, 64, 519
Citations: 9) Anon; FAO Plant Prot Bull 1975, 23, 12
Citations: 10) VSN International Ltd; GenStat for Windows, Release 11.1 2008
Citations: 11) American Society of Agricultural Engineers; ASAE Standards 1995, D241.4, 422
Citations: 12) Bell, C; J Stored Prod Res 1976, 12, 77
Citations: 13) Hole, B; J Stored Prod Res 1976, 12, 235 phosphine/ fumigation/ wheat/ sorption/ food/ preservation Code: FATE.

Daglish, Gregory J. and Pavic, Hervoika (2008). Effect of phosphine dose on sorption in wheat. *Pest Manage. Sci.* 64: 513-518.
Chem Codes: In spite of the extensive use of phosphine fumigation around the world to control insects in stored grain, and the knowledge that grain sorbs phosphine, the effect of concn. on sorption has not been quantified. A lab. study was undertaken, therefore, to investigate the effect of phosphine dose on sorption in wheat. Wheat was added to glass flasks to achieve filling ratios of 0.25-0.95, and the flasks were sealed

and injected with phosphine at 0.1-1.5 mg/L based on flask vol. Phosphine concn. was monitored for 8 days at 25 Deg and 55% relative humidity. When sorption occurred, phosphine concn. declined with time and was .apprx.1st order, i.e. the data fitted an exponential decay equation. Percentage sorption per day was directly proportional to filling ratio, and was neg. correlated with dose for any given filling ratio. Based on the results, a 10-fold increase in dose would result in a halving of the sorption const. and the percentage daily loss. Wheat was less sorptive if it was fumigated for a second time. The results have implications for the use of phosphine for control of insects in stored wheat. This study shows that dose is a factor that must be considered when trying to understand the impact of sorption on phosphine concn., and that there appears to be a limit to the capacity of wheat to sorb phosphine. [on SciFinder (R)] PMSCFC 1526-498X Copyright: Copyright (C) 2010 ACS on SciFinder (R))
Database: CAPLUS
Accession Number: AN 2008:586536
Chemical Abstracts Number: CAN 149:71885
Section Code: 5-4
Section Title: Agrochemical Bioregulators
Document Type: Journal
Language: written in English.
Index Terms: Triticum aestivum; Wheat (effect of phosphine dose on sorption in wheat)
CAS Registry Numbers: 7803-51-2 (Phosphine) Role: AGR (Agricultural use), BSU (Biological study, unclassified), BIOL (Biological study), USES (Uses) (effect of phosphine dose on sorption in wheat)
Citations: 1) Hole, B; J Stored Prod Res 1976, 12, 235
Citations: 2) Price, L; J Stored Prod Res 1988, 24, 51
Citations: 3) Daglish, G; Pest Manag Sci 2002, 58, 1015
Citations: 4) Nayak, M; Pest Manag Sci 2003, 59, 1191
Citations: 5) Collins, P; J Stored Prod Res 2005, 41, 373
Citations: 6) Lorini, I; Pest Manag Sci 2007, 63, 358
Citations: 7) Andrews, A; Stored Product Protection, Proceedings of 6th International Working Conference on Stored-product Protection 1994, 27
Citations: 8) Berck, B; J Agric Food Chem 1968, 16, 419
Citations: 9) Sato, K; Appl Entomol Zool 1974, 9, 127
Citations: 10) Rauscher, H; J Agric Food Chem 1972, 20, 331
Citations: 11) Dumas, T; J Agric Food Chem 1980, 28, 337
Citations: 12) Vincent, L; J Econ Entomol 1971, 64, 122
Citations: 13) Banks, H; Fumigation and Controlled Atmosphere Storage of Grain, Proceedings of International Conference 1990, Proceedings No 25, 96
Citations: 14) Banks, H; Proceedings of International Conference on Controlled Atmosphere and Fumigation in Grain Storages 1993, 241
Citations: 15) Rangaswamy, J; Lebensmittel-Wissenschaft und - Technologie 1993, 26, 447
Citations: 16) Reed, C; J Stored Prod Res 2000, 36, 263
Citations: 17) Reddy, P; Pest Manag Sci 2007, 63, 96
Citations: 18) Benhalima, H; J Stored Prod Res 2004, 40, 241
Citations: 19) Anon; FAO Plant Prot Bull 1975, 23(FAO Method No 16), 12
Citations: 20) GenStat 8 Committee VSN International Limited; Genstat for Windows Release 8.1 2005
phosphine/ sorption/ Triticum Code: FATE.

Darby, James A (2008). A kinetic model of fumigant sorption by grain using batch experimental data. *Pest Manage. Sci.* 64: 519-526.
Chem Codes: Most fumigants are adsorbed by grain at differing rates depending on the fumigant or grain type. Sorption can reduce the concns. of fumigation doses to sublethal levels before grain has been disinfested. A model to predict fumigant losses due to sorption in industrial scenarios is needed. This work studies the kinetics of grain fumigant sorption and develops a new alternative model based upon key factors established from the literature and batch exptl. results. The novel model accounts for linear mass transfer within the grain, irreversible 'binding' and linear partitioning of the fumigant to the grain. Model coeffs. were estd. by minimizing the sum of squared residuals between model predictions and exptl. data. The model was compared with other options including diffusion into spheres, and results for Me bromide and phosphine are provided. The model describes the transient changes of fumigant concns. in both the

intergranular air and grain. It provides the capacity to predict fumigant concns. throughout grain stacks for a wide range of scenarios of industrial importance. [on SciFinder (R)] PMSCFC 1526-498X
Database: CAPLUS
Accession Number: AN 2008:586537
Chemical Abstracts Number: CAN 149:222072
Section Code: 17-4
Section Title: Food and Feed Chemistry
CA Section Cross-References: 5
Document Type: Journal
Language: written in English.
Index Terms: Fumigation; Seed; Simulation and Modeling; Sorption (kinetic model of fumigant sorption by grain)
CAS Registry Numbers: 74-83-9 (Methyl bromide); 7803-51-2 (Phosphine) Role: AGR (Agricultural use), FFD (Food or feed use), BIOL (Biological study), USES (Uses) (kinetic model of fumigant sorption by grain)
Citations: 1) Lubatti, O; Nature (London) 1945, 3941, 577
Citations: 2) Ponec, V; Adsorption on Solids (English translation) 1974
Citations: 3) Ruthven, D; Principles of Adsorption and Adsorption Processes 1984
Citations: 4) Treybal, R; Mass-Transfer Operations, 3rd edition 1980, 565
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Citations: 6) Banks, H; Proceedings of an International Conference on Controlled Atmosphere and Fumigation in Grain Storages 1993, 241
Citations: 7) Lubatti, O; JSCI 1944, 63, 353
Citations: 8) Lindgren, D; J Econ Entomol 1962, 55, 773
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Citations: 10) Banks, H; SEAMEO BIOTROP Special Publication 1992, 45, 177
Citations: 11) Yonglin, R; J Zhenshuo Grain College 1987, 4, 47
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Citations: 16) Cryer, S; J Agric Food Chem 2005, 53, 4103
Citations: 17) Streck, T; Water Resour Res 1995, 31, 811
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Citations: 19) Dumas, T; J Agric Food Chem 1980, 28, 337
Citations: 20) Moku, M; Japan Plant Protection Service Research Bulletin (Shokubutsu Boekisho Chosa Kenkyu Hokoku) 1987, 23, 53
Citations: 21) Noack, S; Z Lebensmittel-Untersuchung und Forschung 1983, 174, 1
Citations: 22) Noack, S; Z Lebensmittel-Untersuchung und Forschung 1983, 177, 87
Citations: 23) Meuser, F; Die Muhle und Mischfuttertechnik 1977, 144, 435
Citations: 24) Banks, H; Pesticides and Humid Tropical Grain Storage Systems: Proceedings of an International Seminar 1986, Proceedings No 14, 179
Citations: 25) Shrader, S; Ind Eng Chem Anal Ed 1942, 14, 1
Citations: 26) Disney, R; Radiotracer Studies of Chemical Residues in Food and Agriculture 1972, IAEA-PL-469/13, 99
Citations: 27) Robinson, J; J Stored Prod Res 1970, 6, 133
Citations: 28) Do, D; Adsorption Analysis: Equilibria and Kinetics 1998
Citations: 29) Chang, C; Cereal Chem 1979, 56, 321
Citations: 30) Park, S; PhD Thesis, Kansas State University 1974
Citations: 31) Park, S; Cereal Chem 1975, 52, 611
Citations: 32) Noack, S; Z Lebensmittel-Untersuchung und Forschung 1984, 178, 97
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Citations: 34) Damcevski, K; J Stored Prod Res 2006, 42, 61
Citations: 35) Reuss, R; Advances in Stored Product Protection, Proceedings of the 8th International Working Conference on Stored Product Protection 2003, 533

Citations: 36) Weller, G; Advances in Stored Product Protection, Proceedings of the 8th International Working Conference on Stored Product Protection 2003, 493
Citations: 37) Crank, J; The Mathematics of Diffusion, 2nd edition 1975, 93
Citations: 38) Cofie-Agblor, R; J Stored Prod Res 1998, 34, 159
Citations: 39) Bird, R; Transport Phenomena 1960 model/ fumigant/ sorption/ grain Code: FATE.

Deng Yong-xue, Wang Jin-jun, Ju Yun-mei, and Zhang Hai-yan (2004). Comparison of Fumigation Activities of 9 Kinds of Essential Oils Against the Adults of Maize Weevil, Sitophilus Zeamaise Motschulsky (Coleoptera: Curculionidae). *Chinese Journal of Pesticide Science [Chin. J. Pestic. Sci.]*. 6, 85-88. Sep 2004.
Chem Codes: Descriptors: Article Subject Terms: Essential oils
Descriptors: Fumigants
Descriptors: Toxicity testing
Descriptors: Article Taxonomic Terms: Curculionidae
Descriptors: Sitophilus zeamais
Abstract: By means of sealing jar, fumigant toxicities of the essential oils of Citrus tangerina, Citrus limon, Citrus hongheensis, Litsea cubeba, Mentha spicata, Pinus tabulaeformis, Cinnamoum camphora, Melaleuca alternifolia and Eucalyptus globules on adults of maize weevil, Sitophilus zeamaise Motschulsky were investigated at the dosage of 16 mu L/L and under the exposure times of 24 h, 36 h, 48 h, and 60 h, respectively. The results indicated that fumigation efficacies of the essential oils of Cinnamoum camphora, Melaleuca alternifolia, Citrus limon, Mentha spicata, and Pinus tabulaeformis are better than those of the other four essential oils, and Cinnamoum camphora oil showed the best fumigation toxicity. The LC sub(50)s of the maize weevil adults fumigated by Cinnamoum camphora oil under the exposure times of 12 h, 24 h, 36 h, 48 h and 60 h are 31.43, 11.26,6.16,2.72 and 1.11 mu L/L, respectively. Cinnamoum camphora oil can be considered as a promising alternative substance for methyl bromide and phosphine to control maize weevil.
Chinese; English
Publication Type: Journal Article
Classification: Z 05183 Toxicology & resistance
Subfile: Entomology Abstracts Code: NON-ENGLISH.

Chinese

Devai Istvan, Delaune Ronald D, Devai Gyorgy, Aradi Csaba, Gori Szilvia, Nagy Alex Sandor, and Talas Zsuzsa (2007). Characterization of Mercury and Other Heavy Metals in Sediment of an Ecological Important Backwater Area of River Tisza (Hungary). *Journal of Environmental Science and Health, Part A: Toxic/Hazardous Substances & Environmental Engineering [J. Environ. Sci. Health, Pt. A: Toxic/Hazard. Subst. Environ. Eng.]*. 42, 42: 859-864. Jun 2007., 859-864.
Chem Codes: Descriptors: Article Subject Terms: Aves
Descriptors: Backwater
Descriptors: Backwaters
Descriptors: Boron
Descriptors: Copper
Descriptors: Fluvial Sediments
Descriptors: Heavy Metals
Descriptors: Heavy metals
Descriptors: Mercury
Descriptors: Methyl mercury
Descriptors: Methylmercury
Descriptors: Nature conservation
Descriptors: Physical properties
Descriptors: Rivers
Descriptors: Sediment Contamination
Descriptors: Sediment chemistry
Descriptors: Sediment pollution
Descriptors: Sediment properties

Descriptors: Soil
Descriptors: Soil Contamination
Descriptors: Wetlands
Descriptors: backwaters
Descriptors: heavy metals
Descriptors: Article Geographic Terms: Hungary
Abstract: Sediment from a representative and ecologically important backwater wetland under the influence of River Tisza (Hungary) was chemically characterized for sediment pollutants. Phosphine production potential, methyl mercury, mercury, and other heavy metals were determined along with other sediment chemical and physical properties. The wetland site, which is relatively isolated, represents an important bird reserve and nature conservation area. Methyl mercury and total mercury content was also low reflecting little mercury pollution in the sediment. Results of heavy metal analysis showed that only copper was elevated with concentration slightly above the reported levels considered excessive in soils and sediments. Other sediment properties were in normal range except boron content, which was high. Results show sediment were relatively unpolluted but should be routinely monitored to insure that this ecologically important area remains environmentally safe for future generation.
Publisher: Taylor & Francis, 11 New Fetter Lane London EC4P 4EE UK, [mailto:info@tandf.co.uk], [URL:http://www.tandf.co.uk]
DOI: 10.1080/10934520701373141
English
Publication Type: Journal Article
Classification: AQ 00003 Monitoring and Analysis of Water and Wastes
Classification: SW 3030 Effects of pollution
Classification: P 2000 FRESHWATER POLLUTION
Classification: Q5 01503 Characteristics, behavior and fate
Classification: Q2 02264 Sediments and sedimentation
Classification: EN 40 Water Pollution: Monitoring, Control & Remediation
Classification: M3 1010 Issues in Sustainable Development
Subfile: Pollution Abstracts; Aqualine Abstracts; ASFA 2: Ocean Technology Policy & Non-Living Resources; Sustainability Science Abstracts; Water Resources Abstracts; ASFA 3: Aquatic Pollution & Environmental Quality Code: FATE.

English

Dieguez-Acu&Ntilde, A, F. J., and Woods, J. S. (Inhibition of Nf-Kappab-Dna Binding by Mercuric Ion: Utility of the Non-Thiol Reductant, Tris(2-Carboxyethyl)Phosphine Hydrochloride (Tcep), on Detection of Impaired Nf-Kappab-Dna Binding by Thiol-Directed Agents. *Toxicol in vitro. 2000, feb; 14(1):7-16. [Toxicology in vitro : an international journal published in association with bibra]: Toxicol In Vitro.*
Chem Codes: ABSTRACT: Mercuric ion (Hg(2+)), a potent thiol inhibitor, prevents expression of nuclear factor kappaB (NF-kappaB) by mercaptide bond formation with a critical cysteine moiety (cys(62)) on the p50 subunit required for DNA binding. NF-kappaB-DNA binding is typically measured in reaction mixtures in which dithiothreitol (DTT) or other thiol reductants are used to maintain cys(62) in the reduced state. However, the presence of thiol reductants prevents accurate assessment of the Hg(2+) concentration required to prevent NF-kappaB-DNA binding because of competitive mercaptide bond formation. In the present studies we evaluated the efficacy of tris(2-carboxyethyl)phosphine-HCl (TCEP), a non-thiol reducing agent which does not bind Hg(2+), on NF-kappaB-DNA binding in vitro, using recombinant p50 protein and a (32)P-labelled kappaB oligonucleotide. We also measured the minimal Hg(2+) concentration required to prevent this interaction in the presence of either reagent. DTT promoted NF-kappaB-DNA binding in concentrations from 0.25 to 2.6mM in binding reactions. However, in the presence of 0.25mM DTT, inhibition of NF-kappaB binding was seen only at Hg(2+) concentrations greater than 100 microM and results were highly variable. In contrast, TCEP promoted NF-kappaB-DNA binding in a dose-related manner in concentrations from 0.25 to 6mM. In the presence of even 6mM TCEP, Hg(2+) prevented NF-kappaB-DNA binding at concentrations as low as 20 microM in binding reactions. Similar findings were observed with regard to the thiol alkylating agent N-ethylmaleimide (NEM). These findings demonstrate the utility of TCEP as reductant in nuclear binding reaction assays involving the interaction of thiol constituents. They also demonstrate inhibition of NF-kappaB-DNA binding at Hg(2+) concentrations

comparable to those known to initiate toxicity and apoptotic cell death in vivo.
MESH HEADINGS: DNA/*drug effects/metabolism
MESH HEADINGS: Dithiothreitol/pharmacology
MESH HEADINGS: Electrophoresis, Polyacrylamide Gel
MESH HEADINGS: Ethylmaleimide/pharmacology
MESH HEADINGS: Humans
MESH HEADINGS: Mercury/*pharmacology
MESH HEADINGS: NF-kappa B/*antagonists &amp
MESH HEADINGS: inhibitors/drug effects/metabolism
MESH HEADINGS: Oligonucleotides/pharmacology
MESH HEADINGS: Phosphines/*pharmacology
MESH HEADINGS: Recombinant Proteins/pharmacology
MESH HEADINGS: Reducing Agents/*pharmacology
MESH HEADINGS: Sulfhydryl Reagents/*pharmacology Code: IN VITRO.

eng

Donahaye, E. J (2000). Current status of non-residual control methods against stored product pests. *Crop Prot.* 19: 571-576.
Chem Codes: A review with 39 refs. There is an increasing dichotomy between the demands of the first world for quality food uncontaminated by insecticidal residues, and the desperate need of third-world populations to maintain and protect their harvested grain from the deprivations of insects, so as to maintain a min. level of food security. Fumigation is widely regarded as a non-residual treatment and fumigation with phosphine will continue for the immediate future as the mainstay against insect infestation. However, to ensure its continued use, insect resistance to phosphine must be countered by more efficient application techniques. Already, available alternative control technologies such as hermetic storage and the use of controlled atmospheres using either nitrogen or carbon dioxide also rely heavily on well-sealed storage structures, that are rarely available in rigid silos, but easily obtainable with flexible plastic liners. Aeration systems to cool grain bulks and thereby prevent insect development, are being widely used even in warm climates but are only applicable for bulk grain. Other non-residual treatments such as mech. impaction, irradn., biol. control or heating, are suitable for high-quality commodities or niche situations. [on SciFinder (R)] CRPTD6 0261-2194 Copyright: Copyright (C) 2010 ACS on SciFinder (R))
Database: CAPLUS
Accession Number: AN 2000:895591
Chemical Abstracts Number: CAN 134:158775
Section Code: 5-0
Section Title: Agrochemical Bioregulators
Document Type: Journal; General Review
Language: written in English.
Index Terms: Insecticides   (fumigants; non-residual control methods against stored product pests with); Fumigants   (insecticidal; non-residual control methods against stored product pests with); Controlled atmospheres; Fumigants   (non-residual control methods against stored product pests with); Insect   (stored product-infesting; non-residual control methods against)
CAS Registry Numbers: 7803-51-2 (Phosphine) Role: BUU (Biological use, unclassified), BIOL (Biological study), USES (Uses)   (non-residual control methods against stored product pests with)
Citations: Andrews, A; Proceedings of the Sixth International Wkg Conference on Stored-product Protection 1994, 1, 27
Citations: Annis, P; Proceedings of the International Conference on Controlled Atmosphere and Fumigation in Grain Storages 1992 1993, 71
Citations: Annis, P; Suggested recommendations for the fumigation of grain in the ASEAN region Part 2 1991, 58
Citations: Bailey, S; J Stored Prod Res 1965, 1, 25
Citations: Banks, H; Proceedings of the Sixth International Wkg Conference on Stored-product Protection, 1, 2
Citations: Bell, C; The Methyl Bromide Issue Agrochemicals in Plant Protection 1996, 1, 400
Citations: Calderon, M; Controlled Atmosphere Storage of Grains An International Symposium 1980, 39

Citations: Cassells, J; Proceedings of the Sixth International Wkg Conference on Stored-product Protection 1994, 1, 56
Citations: Chaudhry, M; Proceedings of the International Conference on Controlled Atmosphere and Fumigation in Stored Products 1997, 45
Citations: Delmenico, R; Proceedings of the International Conference on Controlled Atmosphere and Fumigation in Grain Storages 1992 1993, 3
Citations: Donahaye, E; J Stored-Prod Res 1996, 32, 232
Citations: Fleurat-Lessard, F; Proceedings of the Workshop on Alternatives to Methyl Bromide 1996, 83
Citations: Friendship, C; GASGA Seminar on Fumigation Technology in Developing Countries 1986, 141
Citations: Haines, C; Trop Stored Prod Info 1984, 49, 17
Citations: Holman, L; Marketing Res Rep 1960, 178, 46
Citations: Hukill, W; Agric Eng 1953, 34, 456
Citations: Hyde, M; Proceedings of the Fifth British Insecticides and Fungicides Conference 1969, 412
Citations: Jay, E; GASGA Seminar on Fumigation Technology in Developing Countries 1986, 173
Citations: Jay, E; Proceedings of the International Symposium on Practical Aspects of Controlled Atmosphere and Fumigation in Grain Storages 1983 1984, 3
Citations: Maier, D; Proceedings of the Sixth International Wkg Conference on Stored-product Protection 1994, 1, 300
Citations: Markham, R; Proceedings of the Sixth International Wkg Conference on Stored-product Protection 1994, 1, 1087
Citations: Navarro, S; Proceedings of the seventh International Wkg Conference on Stored-product Protection 1998 1999, 1, 335
Citations: Navarro, S; J Stored Prod Res 1969, 5, 73
Citations: Navarro, S; ACIAR Proceedings No 25 1989 1990, 152
Citations: Anon; The mechanics and physics of modern grain aeration management in press 2000, Cat No 1355
Citations: Noyes, R; Proceedings of the Sixth International Wkg Conference on Stored-product Protection 1994, 1, 335
Citations: Noyes, R; Proceedings of the International Conference on Controlled Atmosphere and Fumigation in Stored Products 1997, 1, 359
Citations: Oxley, T; Proceedings of the third International Bread Congress 1955, 179
Citations: Oxley, T; Ann Appl Biol 1963, 51, 313
Citations: Shedd, C; Agric Eng 1953, 34, 616
Citations: Soderstrom, E; J Stored Prod Res 1992, 28, 235
Citations: Taylor, R; Proceedings of the Sixth International Wkg Conference on Stored-Product Protection 1994, 1, 210
Citations: Tyler, P; Int Pest Control 1983, 25, 10
Citations: UNEP; Montreal Protocol on substances that deplete the ozone layer 1994 1995, 304
Citations: van Graver, S; Suggested recommendations for the fumigation of grain in the ASEAN region: Part 3 1994, 79
Citations: Winks, R; Proceedings of the fourth International Wkg Conference on Stored-product Protection 1986 1987, 335
Citations: Winks, R; Proceedings of the International Conference on Controlled Atmosphere and Fumigation in Grain Storages 1992 1993, 399
Citations: Winks, R; Proceedings of the International Conference on Controlled Atmosphere and Fumigation in Stored Products 1997, 293
Citations: Zettler, J; Proceedings of the International Conference on Controlled Atmosphere and Fumigation in Stored Products 1997, 445 review/ fumigant/ insecticide/ controlled/ atm/ stored/ product/ pest Code: REVIEW.

Drolet, R., Laverty, S., Braselton, W. E., and Lord, N. (1996). Zinc Phosphide Poisoning in a Horse. *Equine Vet. J.* 28: 161-162 .
Chem Codes: Chemical of Concern: ZnP Code: INCIDENT.

Fiedler, L. A. (1988). Rodent Pest Problems and Management in Eastern Africa. *FAO Plant Prot.Bull.* 36: 125-134.
Code: REVIEW.

Fiedler, L. A. (1988). Rodent Pest Problems and Management in Eastern Africa. *FAO Plant Prot.Bull.* 36: 125-134.
Chem Codes: EcoReference No.: 75721
Chemical of Concern: BDF,CPC,NaFA,RSG,Tl,WFN,ZnP Code: REVIEW.

Fields, P. G. and White, N. D. G. (2002). Alternatives to Methyl Bromide Treatments for Stored-Product and Quarantine Insects. *Annual Review of Entomology, 47 (-) pp. 331-359, 2002*.
Chem Codes: Descriptors: Ozone
Descriptors: Flour mills
Descriptors: Warehouses
Descriptors: Phosphine
Descriptors: Heat
Descriptors: Cold
Descriptors: Sulfuryl fluoride
Descriptors: Fumigation
Abstract: Methyl bromide is used to control insects as a space fumigant in flour and feed mills and ship holds, as a product fumigant for some fruit and cereals, and for general quarantine purposes. Methyl bromide acts rapidly, controlling insects in less than 48 h in space fumigations, and it has a wide spectrum of activity, controlling not only insects but also nematodes and plant-pathogenic microbes. This chemical will be banned in 2005 in developed countries, except for exceptional quarantine purposes, because it depletes ozone in the atmosphere. Many alternatives have been tested as replacements for methyl bromide, from physical control methods such as heat, cold, and sanitation to fumigant replacements such as phosphine, sulfuryl fluoride, and carbonyl sulfide, among others. Individual situations will require their own type of pest control techniques, but the most promising include integrated pest management tactics and combinations of treatments such as phosphine, carbon dioxide, and heat.
156 refs.
English
Publication Type: Journal
Publication Type: Review
Country of Publication: United States
Classification: 92.10.4.3 CROP SCIENCE: Crop Protection: Pests
Classification: 92.10.2.1 CROP SCIENCE: Agronomy and Horticulture: Cereals
Classification: 92.10.2.5 CROP SCIENCE: Agronomy and Horticulture: Fruit and nuts
Subfile: Plant Science Code: REVIEW.

English

Garry, Vincent F., Griffith, Jack, Danzl, Thomas J., Nelson, Richard L., Whorton, Elbert B., Krueger, Lisa A., and Cervenka, Jaroslav (1989). Human genotoxicity: pesticide applicators and phosphine. *Science (Washington, D. C., 1883-)* 246: 251-5.
Chem Codes: Fumigant applicators who, 6 wk to 3 mo earlier, had been exposed to PH3, a common grain fumigant, or to PH3 and other pesticides had significantly increased stable chromosome rearrangements, primarily translocations in G-banded lymphocytes. Less stable aberrations, including chromatid deletions and gaps, were significantly increased only during the application season, but not at this latter time point. During fumigant application, measured exposure to PH3 exceeded accepted national stds. Because PH3 is also used as a dopant in the microchip industry and is generated in waste treatment, the possibility of more widespread exposure and long-term health sequelae must be considered. [on SciFinder (R)] SCIEAS 0036-8075 Copyright: Copyright (C) 2010 ACS on SciFinder (R))
Database: CAPLUS
Accession Number: AN 1990:61955
Chemical Abstracts Number: CAN 112:61955
Section Code: 59-5
Section Title: Air Pollution and Industrial Hygiene
CA Section Cross-References: 4, 5
Document Type: Journal
Language: written in English.
Index Terms: Chromatid (aberrations of, in lymphocytes in occupational exposure to phoshine, in

humans); Chromosome (aberrations of, in lymphocytes, occupational exposure to phoshine in relation to, in humans); Air pollution (by phosphine, occupational exposure to, chromosome and chromatid aberrations in lymphocytes of workers in relation to); Lymphocyte (chromosomes and chromatids of, aberrations in, from occupational exposure to phosphine, in humans); Cereal (fumigation of, with phosphine, occupational exposure in, genotoxicity in relation to); Hygiene (industrial, in phosphine application in fumigation, chromosome and chromatid aberrations in lymphocytes of workers in relation to) CAS Registry Numbers: 7803-51-2 (Phosphine) Role: ADV (Adverse effect, including toxicity), BIOL (Biological study) (occupational exposure to, chromosome and chromatid aberrations in lymphocytes in workers in relation to) phosphine/ occupational/ exposure/ genotoxicity;/ chromosome/ aberration/ occupational/ exposure/ phosphine;/ chromatid/ aberration/ occupational/ exposure/ phosphine;/ health/ hazard/ phosphine/ occupational/ exposure Code: HUMAN HEALTH.

Gassmann, G., Van Beusekom, J. E. E., and Glindemann, D. (1996). Offshore Atmospheric Phosphine. *Naturwissenschaften.* 83, 83: 129-131. 1996., 129-131.
Chem Codes: Descriptors: Article Subject Terms: air pollution
Descriptors: air sampling
Descriptors: air-sea interaction
Descriptors: air-water interactions
Descriptors: atmosphere
Descriptors: atmospheric chemistry
Descriptors: gases
Descriptors: marine environment
Descriptors: ocean-atmosphere system
Descriptors: phosphorus
Descriptors: phosphorus cycle
Descriptors: sea surface
Descriptors: troposphere
Descriptors: volatile compounds
Descriptors: Article Geographic Terms: ANE, Germany, German Bight
Descriptors: ANE, North Sea
Abstract: In the summer of 1995, gaseous phosphine (PH sub(3)) as a potential volatile participant in the atmospheric phosphorus cycle was observed for the first time in the lower troposphere close to the sea surface in the German Bight (North Sea). While the daytime concentration of atmospheric PH sub(3) remained at a low level of 41 pg m super(-3), the postmidnight concentration peaked at a value of 885 pg m super(-3) (plus or minus 30% rel.s.d.).
Publication Type: Journal Article
Classification: P 0000 AIR POLLUTION
Classification: Q2 02188 Atmospheric chemistry
Classification: Q5 01503 Characteristics, behavior and fate
Subfile: ASFA 3: Aquatic Pollution & Environmental Quality; ASFA 2: Ocean Technology Policy & Non-Living Resources; Pollution Abstracts Code: FATE.

English

Geissbuhler, H., Brooks, G. T., and Kearney, P. C. (1978). Biochemistry of Pests and Mode of Action of Pesticides, Pesticide Degradation, Pesticide Residues, Formulation Chemistry. *Advances in Pesticide Science, Part 3: Biochemistry of Pests and Mode of Action of Pesticides, Pesticide Degradation, Pesticide Residues, Formulation Chemistry, Permagon Press, NY*, 8 p. (Table of Contents only).
Code: REFS CHECKED/REVIEW/SKIMMED.

Symp.at 4th Int.Cong.Pestic.Chem., Zurich, Switzerland - Available EPA Corvallis library//Skimmed LRN, 10/09 - None to order (methods, food, review, fate data only)//

Geissbuhler, H., Brooks, G. T., and Kearney, P. C. (1978). Biochemistry of Pests and Mode of Action of Pesticides, Pesticide Degradation, Pesticide Residues, Formulation Chemistry. *Advances in Pesticide Science, Part 3: Biochemistry of Pests and Mode of Action of Pesticides, Pesticide Degradation, Pesticide Residues,*

Formulation Chemistry, Permagon Press, NY, 8 p. (Table of Contents only).
Chem Codes: EcoReference No.: 93504
Chemical of Concern: CuS,DDT,FNV,HCCH,LNR,MLT,MOM,MXC,NaBT,PPA,PYT,SMT,TXP,ZnP
Code: REFS CHECKED,REVIEW,SKIMMED.

Gendeh, G. S., Young, L. C., De Medeiros C Lc, Jeyaseelan, K., Harvey, A. L., and Chung, M. Cm (1997). A New Potassium Channel Toxin From the Sea Anemone Heteractis Magnifica: Isolation, Cdna Cloning, and Functional Expression. *Biochemistry* 36: 11461-11471.
Chem Codes: ABSTRACT: BIOSIS COPYRIGHT: BIOL ABS. A new potassium channel toxin, HmK, has been isolated from the sea anemone Heteractis magnifica. It inhibits the binding of (125I)-alpha-dendrotoxin (a ligand for voltage-gated K channels) to rat brain synaptosomal membranes with a Ki of about 1 nM, blocks K+ currents through Kv 1.2 channels expressed in a mammalian cell line, and facilitates acetylcholine release at the avian neuromuscular junction. HmK comprises of 35 amino acids (Mr 4055) with the sequence R1TCKDLIPVS10ECTDIRCRTS20MKYRLNLCRK30TCGSC35. A full assignment of the disulfide linkages was made by using partial reduction with tri(2-carboxyethyl)phosphine (TCEP) at acid pH and rapid alkylation with iodoacetamide. The disulfide bridges were identified as Cys3-Cys35, Cys12-Cys28, and Cys17-Cys32. A cDNA clone encoding HmK was isolated using RT-PCR from the total RNA obtained from sea anemone tentacles, while the 5'- and 3'-flanking regions of the cDNA were amplified by RACE. The full-length cDNA was 563 bp lon
MESH HEADINGS: ANIMALS
MESH HEADINGS: CYTOLOGY
MESH HEADINGS: HISTOCYTOCHEMISTRY
MESH HEADINGS: AMINO ACIDS/ANALYSIS
MESH HEADINGS: PEPTIDES/ANALYSIS
MESH HEADINGS: PROTEINS/ANALYSIS
MESH HEADINGS: AMINO ACIDS
MESH HEADINGS: PEPTIDES
MESH HEADINGS: PROTEINS
MESH HEADINGS: DNA REPLICATION
MESH HEADINGS: TRANSCRIPTION, GENETIC
MESH HEADINGS: TRANSLATION, GENETIC
MESH HEADINGS: BIOPHYSICS
MESH HEADINGS: MACROMOLECULAR SYSTEMS
MESH HEADINGS: MOLECULAR BIOLOGY
MESH HEADINGS: ENZYMES/ANALYSIS
MESH HEADINGS: AMINO ACIDS/METABOLISM
MESH HEADINGS: PEPTIDES/METABOLISM
MESH HEADINGS: PROTEINS/METABOLISM
MESH HEADINGS: DIAGNOSIS
MESH HEADINGS: NERVOUS SYSTEM
MESH HEADINGS: POISONING
MESH HEADINGS: ANIMALS, LABORATORY
MESH HEADINGS: ANATOMY, COMPARATIVE
MESH HEADINGS: ANIMAL
MESH HEADINGS: CNIDARIA/PHYSIOLOGY
MESH HEADINGS: PHYSIOLOGY, COMPARATIVE
MESH HEADINGS: PATHOLOGY
MESH HEADINGS: ENTEROBACTERIACEAE
MESH HEADINGS: INVERTEBRATES
MESH HEADINGS: BIRDS
MESH HEADINGS: MURIDAE
KEYWORDS: Cytology and Cytochemistry-Animal
KEYWORDS: Biochemical Methods-Proteins
KEYWORDS: Biochemical Studies-Proteins
KEYWORDS: Replication
KEYWORDS: Biophysics-Molecular Properties and Macromolecules

KEYWORDS: Enzymes-Methods
KEYWORDS: Metabolism-Proteins
KEYWORDS: Nervous System-General
KEYWORDS: Toxicology-General
KEYWORDS: Invertebrata
KEYWORDS: Enterobacteriaceae (1992-)
KEYWORDS: Cnidaria
KEYWORDS: Galliformes
KEYWORDS: Muridae Code: BIOLOGICAL TOXICANT.

eng

Geng, Jin-ju, Wang, Qiang, Niu, Xiao-jun, and Wang, Xiao-rong (2005). Formation and release of phosphine in lake sediments under simulative environmental conditions. *Nongye Huanjing Kexue Xuebao* 24: 517-520.
Chem Codes : Phosphine is a natural gaseous carrier of phosphorus in its biogeochem. cycles, and it might be of importance to the phosphorus balance of eutrophic lakes. A lab. study was conducted to det. the effects of various environmental factors on the formation and release of matrix bound phosphine from lake sediments taken from eutrophic Wulongtan Lake in Nanjing city and Taihu Lake of China. Environmental factors included the ratio of water to sediment, disturbance, Fe(II, III) and Mn(II). When the ratio of water to sediment (wt./wt.) was 3:1, both matrix bound phosphine and gaseous phosphine achieved their peak values, with 7,517 ng.kg-1 and 40 ng.m-1, resp. The magnitude order of phosphine in sediments or headspace was similar resp. at other ratios of water to sediment. Disturbance also influenced the behavior of phosphine in lake sediment. Under lower disturbing intensity of 50 rpm the change of matrix bound phosphine concn. was not detected. As the disturbing intensity increased to 100 rpm, there was a progressive and rapid increase at the first 48 h, reaching a max. concn. 7,932 ng.kg-1, then declined gradually subsequently. When the disturbing intensity was 150 rpm, a rapid release process of phosphine was obsd. and approx. 99.6% phosphine disappeared within 120 h, with the disappearing rate of matrix bound phosphine being 43 ng.kg-1.h-1. Matrix hound phosphine concns. in lake sediments were detd. by the balance of natural generation and depletion process. The removal rate of matrix bound phosphine could be accelerated when Fe (III) was added, with 45.6% matrix bound phosphine disappearing in the over 120 h expts. when 3 g MnCl2.4H2O was added to 30 g sediments. Fe (II) and Mn (II) had no significant effect on the elimination rate of the matrix bound phosphine. [on SciFinder (R)] NHKXA7 1672-2043 Copyright: Copyright (C) 2010 ACS on SciFinder (R))
Database: CAPLUS
Accession Number: AN 2005:797479
Chemical Abstracts Number: CAN 144:238848
Section Code: 61-2
Section Title: Water
Document Type: Journal
Language: written in Chinese.
Index Terms: Lakes (eutrophic; formation and release of phosphine in lake sediments under simulative environmental conditions); Lake sediments (formation and release of phosphine in lake sediments under simulative environmental conditions)
CAS Registry Numbers: 7803-51-2 (Phosphine) Role: BSU (Biological study, unclassified), FMU (Formation, unclassified), POL (Pollutant), BIOL (Biological study), FORM (Formation, nonpreparative), OCCU (Occurrence) (formation and release of phosphine in lake sediments under simulative environmental conditions); 15438-31-0; 16397-91-4 (Manganese2+); 20074-52-6 Role: MOA (Modifier or additive use), OCU (Occurrence, unclassified), OCCU (Occurrence), USES (Uses) (formation and release of phosphine in lake sediments under simulative environmental conditions) formation/ release/ phosphine/ lake/ sediment/ modeling/ simulation/ eutrophic/ environment Code: FATE.

Geng Jinju, Niu Xiaojun, Wang Xiaorong, Edwards Marc, and Glindemann Dietmar (2010). The Presence of Trace Phosphine in Lake Taihu Water. *International Journal of Environmental and Analytical Chemistry [Int. J. Environ. Anal. Chem.]*. 90, 90: 737-746. Aug 2010., 737-746.
Chem Codes: Descriptors: Article Subject Terms: Biogeochemical cycles
Descriptors: Biogeochemistry

Descriptors: Emissions
Descriptors: Equilibrium
Descriptors: Henry's law
Descriptors: Interfaces
Descriptors: Lakes
Descriptors: Oxidation
Descriptors: Phosphates
Descriptors: Phosphorus
Descriptors: Speciation
Descriptors: Warm seasons
Descriptors: Water Analysis
Descriptors: Water Sampling
Descriptors: Water sampling
Descriptors: chemical cycles
Descriptors: water column
Descriptors: Article Geographic Terms: China, People's Rep.
Descriptors: China, People's Rep., Tai Hu L.
Abstract: Phosphine (PH3) is a natural constituent in phosphorus (P) chemical cycles. The discovery of phosphine will shed new light on the mechanisms of P supplement and biogeochemical cycles. Since phosphine is converted to phosphate after complex oxidation via hypophosphite and phosphite, if it were present in the water column, understanding its production and emission could enhance our understanding of P speciation. Assuming that phosphine in the gas phase is an ideal gas and at equilibrium between water and gas interface, phosphine in water solution can be quantified from the equilibrated concentration in gas phase using the Henry's Law. Application of this approach to Lake Taihu, China, phosphine in unfiltered and filtered water samples (0.45 mu m) was analysed. Results showed that phosphine was universally present in Lake Taihu water. Phosphine concentration in unfiltered water ranged from 0.16 to 1.11 pg L-1, and was much less (0.01 to 0.04 pg L-1) in filtered samples. Over 90% of phosphine was adsorbed onto or incorporated into suspended materials with <10% dissolved in the water. Higher phosphine concentrations could be observed in warm seasons. Positive relationships were found between PH3 and TP (average R2 = 0.59 plus or minus 0.22) and TSP (average R2 = 0.37 plus or minus 0.13).
Publisher: Taylor & Francis Group Ltd., 2 Park Square Oxford OX14 4RN United Kingdom
DOI: 10.1080/03067310903013230
English
Publication Type: Journal Article
Classification: M2 556.5 Surface Water Hydrology (556.5)
Classification: P 2000 FRESHWATER POLLUTION
Classification: SW 4050 Water law and institutions
Subfile: Pollution Abstracts; Environment Abstracts; Meteorological & Geoastrophysical Abstracts; Water Resources Abstracts; ASFA 3: Aquatic Pollution & Environmental Quality; ASFA 2: Ocean Technology Policy & Non-Living Resources Code: FATE.

English

Goel, A. and Aggarwal, P. (Pesticide Poisoning. *Natl med j india. 2007 jul-aug; 20(4):182-91. [The national medical journal of india]: Natl Med J India*.
Chem Codes: ABSTRACT: Acute poisoning with pesticides is a global public health problem and accounts for as many as 300,000 deaths worldwide every year. The majority of deaths occur due to exposure to organophosphates, organochlorines and aluminium phosphide. Organophosphate compounds inhibit acetylcholinesterase resulting in acute toxicity. Intermediate syndrome can develop in a number of patients and may lead to respiratory paralysis and death. Management consists of proper oxygenation, atropine in escalating doses and pralidoxime in high doses. It is Important to decontaminate the skin while taking precautions to avoid secondary contamination of health personnel. Organochlorine pesticides are toxic to the central nervous system and sensitize the myocardium to catecholamines. Treatment involves supportive care and avoiding exogenous sympathomimetic agents. Ingestion of paraquat causes severe inflammation of the throat, corrosive injury to the gastrointestinal tract, renal tubular necrosis, hepatic necrosis and pulmonary fibrosis. Administration of oxygen should be avoided as it produces more fibrosis.

Use of immunosuppressive agents have improved outcome in patients with paraquat poisoning. Rodenticides include thallium, superwarfarins, barium carbonate and phosphides (aluminium and zinc phosphide). Alopecia is an atypical feature of thallium toxicity. Most exposures to superwarfarins are harmless but prolonged bleeding may occur. Barium carbonate Ingestion can cause severe hypokalaemia and respiratory muscle paralysis. Aluminium phosphide is a highly toxic agent with mortality ranging from 37% to 100%. It inhibits mitochondrial cytochrome c oxidase and leads to pulmonary and cardiac toxicity. Treatment is supportive with some studies suggesting a beneficial effect of magnesium sulphate. Pyrethroids and insect repellants (e.g. diethyltoluamide) are relatively harmless but can cause toxic effects to pulmonary and central nervous systems. Ethylene dibromide-a highly toxic, fumigant pesticide-produces oral ulcerations, followed by liver and renal toxicity, and is almost uniformly fatal. Physicians working in remote and rural areas need to be educated about early diagnosis and proper management using supportive care and antidotes, wherever available.
MESH HEADINGS: Acute Disease
MESH HEADINGS: Carbamates/*poisoning/toxicity
MESH HEADINGS: Herbicides/poisoning/toxicity
MESH HEADINGS: Humans
MESH HEADINGS: Immunosuppressive Agents/therapeutic use
MESH HEADINGS: Magnesium Sulfate/therapeutic use
MESH HEADINGS: Organophosphorus Compounds/*poisoning/toxicity
MESH HEADINGS: Pesticides/*poisoning/toxicity
MESH HEADINGS: Risk Factors Code: HUMAN HEALTH.

eng

Goodall, M. J., Volz, S. A., Johnston, J. J., Hurlbut, D. B., Mauldin, R. E., Griffin, D. L., and Petty, E. E. (Determination of Zinc Phosphide Residues in Corn (Zea Mays) Grain, Fodder, and Forage. *Bull environ contam toxicol. 1998, jun; 60(6):877-84. [Bulletin of environmental contamination and toxicology]: Bull Environ Contam Toxicol.*
Chem Codes: MESH HEADINGS: Animal Feed/*analysis
MESH HEADINGS: Food Contamination/*analysis
MESH HEADINGS: Pesticide Residues/*analysis
MESH HEADINGS: Phosphines/*analysis
MESH HEADINGS: Quality Control
MESH HEADINGS: Rodenticides/*analysis
MESH HEADINGS: Zea mays/*chemistry
MESH HEADINGS: Zinc Compounds/*analysis Code: FOOD.

eng

Guale, F. G., Stair, E. L., Johnson, B. W., Edwards, W. C., and Haliburton, J. C. (1994). Laboratory Diagnosis of Zinc Phosphide Poisoning. *Vet. Hum. Toxicol.* 36: 517-518.
Chem Codes: EcoReference No.: 86617
Chemical of Concern: ZnP Code: METHODS.

Heck, S. D., Kelbaugh, P. R., Kelly, M. E., Thadeio, P. F., Saccomano, N. A., Stroh, J. G., and Volkmann, R. A. (1994). Disulfide Bond Assignment of Omega -Agatoxins Ivb and Ivc: Discovery of a D-Serine Residue in Omega -Agatoxin Ivb. *Journal of the American Chemical Society [J. AM. CHEM. SOC.].* 116, 10426-10436. Nov 1994.
Chem Codes: Descriptors: Article Subject Terms: amino acid sequence
Descriptors: calcium antagonists
Descriptors: disulfide bonds
Abstract: A TCEP (tris(2-carboxyethyl)phosphine)-based reduction/cysteine amidoalkylation strategy was utilized to solve the disulfide structures of omega -agatoxins IVB (1) and IVC (2). These p-type calcium channel antagonists, isolated from the American funnel-web spider Agelenopsis aperta, were found to have the same amino acid sequence and disulfide bond motif. The difference between omega -Aga IVB (1) and IVC (2) resides in the C-termini (Ser sub(46)) of both peptides. omega -Aga IVB (1) contains a D-serine

residue while omega -Aga IVC (2) has an L-serine in this position. The existence of D-amino acids in eucaryotic systems is extremely rare. To our knowledge, however, this is the first time that a peptide sequence with an established cystine pattern possesses an amino acid in both D and L configurations (DBO).
English
Publication Type: Journal Article
Classification: X 24173 Animals
Subfile: Toxicology Abstracts Code: NO TOXICANT.

English

Heinz, G. H., Hill, E. F., Stickel, W. H., and Stickel, L. F. (1979). Environmental Contaminant Studies by the Patuxent Wildlife Research Center. *In: Kenaga,E.E.(Ed.), Avian and Mammalian Wildlife Toxicology, ASTM STP 693, Philadelphia, PA* 9-35.
Code: REFS CHECKED/REVIEW.

NO TITLES//Was EcoRef # 37069//

Jacob, J. and Leukers, A. (2008). Preference of Birds for Zinc Phosphide Bait Formulations. *Pest Manag. Sci.* 64: 74-80.
Chem Codes: Chemical of Concern: ZnP Code: NO TOXICANT.

Jinju Geng, Qiang Wang, Xiaojun, N. i. u., and Xiaorong Wang (2007). Effects of Environmental Factors on the Production and Release of Matrix-Bound Phosphine From Lake Sediments. *Frontiers of Environmental Science & Engineering in China [Front. Environ. Sci. Eng. China]*. 1, 1: 120-124. Feb 2007., 120-124.
Chem Codes: Descriptors: Article Subject Terms: Abiotic factors
Descriptors: Bases
Descriptors: Depletion
Descriptors: Environmental factors
Descriptors: Eutrophic lakes
Descriptors: Hydrogen Ion Concentration
Descriptors: Laboratories
Descriptors: Laboratory testing
Descriptors: Lake Sediments
Descriptors: Lake deposits
Descriptors: Lakes
Descriptors: Oxygen
Descriptors: Sediment chemistry
Descriptors: Sediments
Descriptors: Temperature
Descriptors: Temperature effects
Descriptors: Testing Procedures
Descriptors: Tests
Descriptors: environmental factors
Descriptors: eutrophic lakes
Descriptors: pH
Descriptors: pH effects
Abstract: Effects of pH, temperature, and oxygen on the production and release of phosphine in eutrophic lake sediments were investigated under laboratory tests. Results indicated that the elimination of matrix-bound phosphine was accelerated under initial pH 1 or 12. Phosphine levels could reach maximum under initial pH 10. The contents of phosphine increased with the addition of alkali under pH 4--12. The rates of phosphine production and release from lake sediments varied with temperature. 20DGC was the most favorable temperature for the production of matrix-bound phosphine. Oxygen showed little effect on matrix-bound phosphine. Matrix-bound phosphine concentrations in lake sediments were concluded to be dependent on a balance of natural generation and depletion processes.
Publisher: Gaodeng Jiaoyu Chubanshe (Higher Education Press), 4 Dewai Dajie Beijing 100011 China

DOI: 10.1007/s11783-007-0022-4
English
Publication Type: Journal Article
Environmental Regime: Freshwater
Classification: Q5 01503 Characteristics, behavior and fate
Classification: Q2 02264 Sediments and sedimentation
Classification: P 2000 FRESHWATER POLLUTION
Classification: SW 6010 Structures
Classification: ENA 08 International
Classification: EN 10 General Environmental Engineering
Subfile: ASFA 2: Ocean Technology Policy & Non-Living Resources; Pollution Abstracts; ASFA 3: Aquatic Pollution & Environmental Quality; Water Resources Abstracts; Environment Abstracts Code: FATE.

English

Kligerman, A. D., Bishop, J. B., Erexson, G. L., Price, H. C., O'Connor, R. W., Morgan, D. L., and Zeiger, E (1994). Cytogenetic and germ cell effects of phosphine inhalation by rodents: II. Subacute exposures to rats and mice. *Environ. Mol. Mutagen.* 24: 301-6.
Chem Codes: To det. the in vivo cytogenetic effects of inhalation of PH3, male F344/N rats and B6C3F1 mice were exposed to target concns. of 0, 1.25, 2.5, or 5 ppm PH3 for 6 h/day for 9 days over an 11-day period. Approx. 20 h after the termination of exposures, blood was removed from the mice and rats by cardiac puncture and the lymphocytes cultured for analyses of sister chromatid exchanges and chromosome aberrations in rats and mice, and micronuclei (MN) in cytochalasin B-induced binucleated lymphocytes from mice. In addn., bone marrow (rats) and peripheral blood (mice) smears were made for the anal. of MN in polychromatic and normochromatic erythrocytes. No significant increase in any of the cytogenetic endpoints was found at any of the concns. examd. Thus, concns. of PH3 up to 5 ppm are not genotoxic to rodents when administered by inhalation for 9 days during an 11-day period as measured by several cytogenetic assays. To evaluate the effects of PH3 on male germ cells, a dominant lethal test was conducted in male mice exposed to 5 ppm PH3 for 10 days over a 12-day period and mated to groups of untreated females (2 females/male) on each of 6 consecutive 4-day mating intervals. None of the 6 groups of females exhibited a significant increase in percent resorptions. Thus, exposure to 5 ppm PH3 by inhalation does not induce dominant lethality in male mouse germ cells at steps in spermatogenesis ranging from late differentiating spermatogonia/early primary spermatocytes through mature sperm. [on SciFinder (R)] EMMUEG 0893-6692 Copyright: Copyright (C) 2010 ACS on SciFinder (R))
Database: CAPLUS
Accession Number: AN 1995:349352
Chemical Abstracts Number: CAN 122:153903
Section Code: 4-6
Section Title: Toxicology
Document Type: Journal
Language: written in English.
Index Terms: Chromosome; Mutagens; Rodent (cytogenetic and germ cell effects of phosphine inhalation by rodents); Mutation (lethal, dominant, cytogenetic and germ cell effects of phosphine inhalation by rodents); Cell nucleus (micro-, cytogenetic and germ cell effects of phosphine inhalation by rodents); Recombination (sister chromatid exchange, cytogenetic and germ cell effects of phosphine inhalation by rodents)
CAS Registry Numbers: 7803-51-2 (Phosphine) Role: ADV (Adverse effect, including toxicity), BIOL (Biological study) (cytogenetic and germ cell effects of phosphine inhalation by rodents) genotoxicity/ phosphine Code: INHALE.

Kligerman, A. D., Bryant, M. F., Doerr, C. L., Erexson, G. L., Kwanyuen, P., and McGee, J. K (1994). Cytogenetic effects of phosphine inhalation by rodents. I: acute 6-hour exposure of mice. *Environ. Mol. Mutagen.* 23: 186-9.
Chem Codes: To det. the in vivo cytogenetic effects of inhalation of PH3, male CD-1 mice were exposed to either 0, 5, 10, or 15 ppm target concns. of PH3 for 6 h. Twenty hours after the termination of exposure,

the spleens of the mice were removed, macerated, and the splenocytes cultured for analyses of sister chromatid exchanges, chromosome aberrations, and micronuclei in cytochalasin B-induced binucleated cells. In addn., bone marrow smears were made for the anal. of micronuclei in polychromatic erythrocytes. No increase in any of the cytogenetic endpoints was found at any of the concns. examd. The only statistically significant response was a concn.-related slowing of the cell cycle in the splenocytes. [on SciFinder (R)] EMMUEG 0893-6692 Copyright: Copyright (C) 2010 ACS on SciFinder (R))
Database: CAPLUS
Accession Number: AN 1994:317635
Chemical Abstracts Number: CAN 120:317635
Section Code: 4-6
Section Title: Toxicology
Document Type: Journal
Language: written in English.
Index Terms: Chromosome (aberrations, phosphine in relation to, in splenocyte); Cell cycle (phosphine effect on, in splenocyte); Cell nucleus (micro-, phosphine in relation to, in splenocyte); Erythrocyte (polychromatic, phosphine-induced micronuclei in); Recombination (sister chromatid exchange, phosphine in relation to, in splenocyte); Spleen (splenocyte, phosphine genotoxicity in)
CAS Registry Numbers: 7803-51-2 (Phosphine) Role: ADV (Adverse effect, including toxicity), BIOL (Biological study) (genotoxicity of) phosphine/ genotoxicity Code: INHALE.

Knight, Michael W. (2006). Zinc Phosphide. 1101-1118.
Chem Codes: Keywords: Phosphide
Keywords: zinc
Keywords: Zinc phosphide
ISSN/ISBN: 978-0-72-160639-2 Code: REVIEW.

Krishnakumar, P., Geeta, M. G., and Gopalan, A. V. (Deliberate Self-Poisoning in Children. *Indian pediatr. 2005, jun; 42(6):582-6. [Indian pediatrics]: Indian Pediatr.*
Chem Codes: ABSTRACT: This prospective study was aimed to analyze the nature of and the factors associated with deliberate self-poisoning in children below the age of 12 years. Children referred to the Child Guidance Clinic for evaluation after recovery from the effects of poisoning during the five-year period between 1999 and 2003 formed the subjects of the study. The children were evaluated for stress factors, psychiatric disorders and the nature and mode of deliberate self-poisoning. Deliberate self-poisoning constituted 0.9% of total admissions due to poisoning. There were 10 boys and 2 girls between the ages of 9 and 12 years. Both acute and chronic stress in the family and school were associated with deliberate self-poisoning. Majority of them had psychiatric disorders. Rat poison (zinc phosphide) was the commonest poison used. Two children got the idea from watching TV serials.
MESH HEADINGS: Child
MESH HEADINGS: Family/psychology
MESH HEADINGS: Female
MESH HEADINGS: Humans
MESH HEADINGS: Male
MESH HEADINGS: Poisoning/*epidemiology
MESH HEADINGS: Self-Injurious Behavior/*epidemiology
MESH HEADINGS: Stress, Psychological/epidemiology Code: HUMAN HEALTH.

eng

Kumar, S. (1992). For Control of Bamboo Rats in Rubber Plantation in Tripura. *Indian For.* 118: 869-870.
Code: NO TOX DATA.

Kumar, S. (1992). For Control of Bamboo Rats in Rubber Plantation in Tripura. *Indian For.* 118: 869-870.
Chem Codes: Chemical of Concern: BDF,ZnP Code: NO TOX DATA.

Lam, W. W., Toia, R. F., and Casida, J. E. (1991). Oxidatively Initiated Phosphorylation Reactions of Phosphine. *J. Agric. Food Chem.* 39: 2274-2278.

Chem Codes: Chemical of Concern: PPHN,ZnP Code: METABOLISM.

Me(acute)chin, V., Consoli, L., Le Guilloux, M., and Damerval, C. (2003). An Efficient Solubilization Buffer for Plant Proteins Focused in Immobilized Ph Gradients. *Proteomics, 3 (7) pp. 1299-1302, 2003*.
Chem Codes: Descriptors: Immobilized pH gradients
Descriptors: Protein solubilization
Descriptors: Two-dimensional gel electrophoresis
Abstract: The solubilization of a large array of proteins before electrophoresis itself is a very critical point for proteomic analyses. We compared the efficiency of several different solubilization buffers. From this work, we defined a very efficient solubilization buffer, including two chaotropes, two reducing agents (R2), two detergents (D2), and two kinds of carrier ampholytes in combination. This so-called R2D2 buffer (5 M urea, 2 M thiourea, 2% 3-[(3-cholamidopropyl) dimethyl-ammonio]-1-propane-sulfonate, 2% N-decyl-N,N-dimethyl-3-ammonio-1-propane-sulfonate, 20 mM dithiothreitol, 5 mM Tris(2-carboxyethyl) phosphine, 0.5% carrier ampholytes 4-6.5, 0.25% carrier ampholytes 3-10) proved to be very efficient for a large range of different samples and allowed us to obtain two-dimensional gels of high resolution and quality.
29 refs.
English
Publication Type: Journal
Publication Type: Conference Paper
Country of Publication: Germany
Classification: 92.1.1.6 BIOCHEMISTRY: Molecular Biology: Proteins
Subfile: Plant Science Code: METHODS.

English

Mehrpour, O., Keyler, D., and Shadnia, S. (Comment on Aluminum and Zinc Phosphide Poisoning. *Clin toxicol (phila). 2009, sep; 47(8):838-9; author reply 839. [Clinical toxicology (philadelphia, pa.)]: Clin Toxicol (Phila).*
Chem Codes: COMMENTS: Comment on: Clin Toxicol (Phila). 2009 Feb;47(2):89-100 (medline /19280425)
MESH HEADINGS: Aluminum Compounds/*poisoning
MESH HEADINGS: Humans
MESH HEADINGS: Hyperglycemia/chemically induced/metabolism
MESH HEADINGS: Pancreas/drug effects/metabolism
MESH HEADINGS: Pesticides/*poisoning
MESH HEADINGS: Phosphines/*poisoning
MESH HEADINGS: Risk Assessment
MESH HEADINGS: Rodenticides/*poisoning
MESH HEADINGS: Zinc Compounds/*poisoning Code: HUMAN HEALTH.

eng

Mittal, V. P. and Vyas, H. J. (1992). Groundnut. *In: I.Prakash and P.K.Ghosh (Eds.), Rodents in Indian Agriculture, Volume 1, State of the Art, Sci.Publ., Jodhpur, India* 249-264.
Code: REVIEW.

ISBN 81-7233-013-8//

Mittal, V. P. and Vyas, H. J. (1992). Groundnut. *In: I.Prakash and P.K.Ghosh (Eds.), Rodents in Indian Agriculture, Volume 1, State of the Art, Sci.Publ., Jodhpur, India* 249-264.
Chem Codes: EcoReference No.: 75524
Chemical of Concern: BDL,CLC,ZnP Code: REVIEW.

Moseby, K. E., De Jong, S., Munro, N., and Pieck, A. (2005). Home Range, Activity and Habitat Use of European Rabbits (Oryctolagus Cuniculus) in Arid Australia: Implications for Control. *Wildlife Research [Wildl.*

Res.]. 32, 305-311. 2005.
Chem Codes: Descriptors: Article Subject Terms: Baiting
Descriptors: Dunes
Descriptors: Feeding behavior
Descriptors: Fumigation
Descriptors: Habitat utilization
Descriptors: Home range
Descriptors: Surface activity
Descriptors: Wildlife management
Descriptors: Article Taxonomic Terms: Oryctolagus cuniculus
Descriptors: Article Geographic Terms: Australia
Abstract: The home range, activity and habitat use of wild European rabbits in northern South Australia were compared during winter and summer, and results used to suggest improvements to control techniques. Average home range was significantly smaller in summer (2.1 ha) than winter (4.2 ha) and there was no significant difference between the sexes. Rabbits used both dune and swale habitat but most warrens and more surface fixes were recorded in dune habitat in both seasons. Proportionally more surface fixes were found in swale habitat at night than during the day. The proportion of diurnal fixes on the surface was not significantly influenced by season, averaging 47% in winter and 62% in summer. Only 30% of radio-collared rabbits flushed by humans retreated to warrens. Comparable levels of diurnal surface activity in both winter and summer suggest that the death rate from fumigation or warren destruction may be similar in both seasons. High levels of diurnal surface activity suggest that warren fumigation may be ineffective unless rabbits can first be flushed to their warrens. The use of dogs to flush rabbits before fumigation or ripping should increase the efficacy of control. Activity data suggest that fumigation or ripping should be conducted between 0900 and 1600 hours in winter and 1100 and 1800 hours in summer when radio-collared rabbits were most likely to be down their warrens. Home-range data suggest that the effectiveness of poison baiting may be increased by placing bait lines closer together in summer and, although bait lines should be concentrated in dune habitat, some poison should also be placed in swale feeding areas remote from warrens. The most successful control method for radio-collared rabbits was fumigation with phosphine gas tablets, with 10 of 11 rabbits successfully killed. Pressure fumigation with chloropicrin was also successful but 1080 poisoning and warren destruction using shovels were all relatively unsuccessful.
DOI: 10.1071/WR04013
English
Publication Type: Journal Article
Classification: D 04700 Management
Subfile: Ecology Abstracts Code: HUMAN HEALTH.

English

Mourier, H. and Poulsen, K. P. (2000). Control of Insects and Mites in Grain Using a High Temperature /Short Time (Htst) Technique. *Journal of Stored Products Research, 36 (3) pp. 309-318, 2000.*
Chem Codes: Descriptors: HTST treatment
Descriptors: Grain insects
Descriptors: Grain mites
Abstract: Wheat infested with grain mites (Acari) and Sitophilus granarius, and maize infested with Prostephanus truncatus, were exposed to hot air in a CIMBRIA HTST Microline toaster registered trade mark sign . Inlet temperatures of the hot air were in the range of 150-750 degree C decreasing to outlet temperatures in the range of 100 300 degree C during the exposure period. A rotating drum, connected to a natural-gas burner was fed with grain which was in constant movement along the drum and thereby mixed thoroughly during the process. The capacity of the toaster was 1000 kg per hour. Complete control of grain mites and adult S. granarius in wheat was obtained with an inlet temperature of 300-350 degree C and an average residence time in the drum of 6 s. More than 99% mortality was obtained for all stages of S. granarius with an inlet temperature of 300-350 degree C and an average exposure period of 40 s. For control of P. truncatus in maize, an inlet temperature of 700 degree C resulted in a complete disinfestation when the exposure time was 19 s. The reduction in grain moisture content was 0.5-1% at treatments giving 100% control. Germination tests indicate that it is possible to choose a combination of inlet temperatures and exposure periods which effectively kills mites and insects in small grains, without harming the

functional properties of the grain. Economy of the method was considered to be competitive with fumigation using phosphine. (C) 2000 Elsevier Science Ltd.
15 refs.
English
Publication Type: Journal
Publication Type: Article
Country of Publication: United Kingdom
Classification: 92.10.4.3 CROP SCIENCE: Crop Protection: Pests
Subfile: Plant Science Code: NO TOXICANT.

English

Mustaffa-Babjee, A., Hua, L. C., and Nazarddin, M. S. (1970). Sodium Chlorate (Naclo3) Poisoning in Cattle. *Malays.Agric.J.* 47: 309-312.
Code: INCIDENT/SURVEY.

Was EcoRef # 38080//

Mustaffa-Babjee, A., Hua, L. C., and Nazarddin, M. S. (1970). Sodium Chlorate (NaClo3) Poisoning in Cattle. *Malays. Agric. J.* 47: 309-312.
Chem Codes: Chemical of Concern: NaClO,ZnP Code: INCIDENT,SURVEY.

Mwanjabe, P. S., Sirima, F. B., and Lusingu, J. (2002). Crop Losses due to Outbreaks of Mastomys natalensis (Smith, 1834) Muridae, Rodentia, in the Lindi Region of Tanzania. *Int. Biodeterior. Biodegrad.* 49: 133-137.
Chem Codes: Chemical of Concern: ZnP Code: NO DURATION,SURVEY.

Neelanarayanan, P., Kanakasabai, R., and Sivaprakasam, C. (1993). Impacts of Zinc Phosphide on the Haematology of the Soft Furred Field Rat, Millardia meltada (Gray). *Comp. Physiol. Ecol.* 18: 144-148.
Chem Codes: Chemical of Concern: ZnP Code: NO DURATION.

Nishiuchi, Y. (1985). Toxicity of Pesticides to Some Aquatic Animals. Vii. Acute Toxicity to Daphnia Magna. *Ecol.Chem.(Seitai Kagaku)* 8: 15-20 (JPN) (ENG ABS).
Code: NON-ENGLISH.

WAS ECOREF 83844//Seitai kagaku = Ecological chemistry//ISSN: 0386-8141// C.A.Sel.-Environ.Pollut.10:104-163325Q (1986)

Noack, S. and Reichmuth, C. (1981). Determination of Limits for Injuring Animals and Plants by Phosphine or Methyl Bromide. I. Studies on Drosophila Melanogaster . *ANZ. SCHADLINGSKD. PFLANZ.-UMWELTSCHUTZ.* 54, 23-27. 1981.
Chem Codes: Original Title: Bestimmung von Schwellenwerten fuer die Schaedigung von Tierischen und Pflanzlichen Organismen Durch Phosphorwasserstoff und Methylbromid. 1. Untersuchungen an Drosophila melanogaster
Descriptors: Article Subject Terms: toxicity
Descriptors: Article Taxonomic Terms: Drosophila melanogaster
Abstract: The dependence of the mortality of D. melanogaster on the duration of fumigation was determined at different concentrations of phosphine or methyl bromide as well as in pure air as a control group. For graphic determination of threshold values the rates of mortality are transformed into probits. The threshold values determined for D. melanogaster are compared with phosphine or methyl bromide concentrations that are harmful to men and animal.
German; English
Publication Type: Journal Article
Classification: Z 05182 Pathology
Classification: X 24151 Acute exposure
Subfile: Toxicology Abstracts; Entomology Abstracts Code: NON-ENGLISH.

German

Patel, R. K., Dubey, O. P., and Awasthi, A. K. (1992). Soybean. *In: I.Prakash and P.K.Ghosh (Eds.), Rodents in Indian Agriculture, Volume 1, State of the Art, Sci.Publ., Jodhpur, India* 265-267.
Code: REFS CHECKED/REVIEW.

ISBN 81-7233-013-8//SEARCH FY05,ALP//

Patel, R. K., Dubey, O. P., and Awasthi, A. K. (1992). Soybean. *In: I.Prakash and P.K.Ghosh (Eds.), Rodents in Indian Agriculture, Volume 1, State of the Art, Sci.Publ., Jodhpur, India* 265-267.
Chem Codes: Chemical of Concern: ZnP Code: REFS CHECKED,REVIEW.

Patteson Kemberly G, Trivedi Neel, and Stadtman Thressa C (2005). Methanococcus Vannielii Selenium-Binding Protein (Sebp): Chemical Reactivity of Recombinant Sebp Produced in Escherichia Coli. *Proceedings of the National Academy of Sciences, USA [Proc. Natl. Acad. Sci. USA]*. 102, 12029-12034. Aug 2005.
Chem Codes: Descriptors: Article Subject Terms: Alkylation
Descriptors: Anoxic conditions
Descriptors: Chemical modification
Descriptors: Coenzymes
Descriptors: Cysteine
Descriptors: Gels
Descriptors: Glutathione
Descriptors: Metabolites
Descriptors: Protein structure
Descriptors: Proteins
Descriptors: Recombinants
Descriptors: Reducing agents
Descriptors: Selenium
Descriptors: Thiols
Descriptors: selenite
Descriptors: Article Taxonomic Terms: Escherichia coli
Descriptors: Methanococcus
Descriptors: Methanococcus vannielii
Abstract: A selenium-binding protein (SeBP) from Methanococcus vannielii was recently identified, and its gene was isolated and overexpressed in Escherichia coli [Self, W. T., Pierce, R. & Stadtman, T. C. (2004) IUBMB Life 56, 501-507]. SeBP and recombinant SeBP (rSeBP) migrated as approximately 42-kDa species on native gels and as approximately 33-kDa species on SDS gels. rSeBP consists of identical 8.8-kDa subunits, each containing a single cysteine residue. rSeBP isolated in the absence of reducing agents contained oxidized cysteine (89%) and very little bound selenium (0.05 eq or less per subunit). Complete reduction of the oxidized cysteine residues in rSeBP with Tris(2-carboxyethyl)phosphine required addition of a denaturant, such as 1 M guanidine-hydrochloride. With selenite as the selenium source and the isolated reduced protein as sole reductant, binding of one selenium per tetramer under anaerobic conditions required four cysteine thiol groups, one on each subunit. In the corresponding reaction, with reduced glutathione (GSH), equimolar amounts of selenodiglutathione (GSSeSG) and glutathione disulfide are formed from selenite and 4 GSH. At GSH-to-selenite ratios >4:1, conversion of GSSeSG to a perselenide derivative, GSSe super(-), occurs. However, with the reduced rSeBP as sole electron donor in the reaction with selenite, further conversion of the R-SSeS-R product apparently did not occur. Prior alkylation of the cysteine thiol groups in reduced rSeBP prevented selenite reduction and selenium binding under comparable conditions.
Publisher: National Academy of Sciences, 2101 Constitution Ave. Washington DC 20418 USA
English
Publication Type: Journal Article
Classification: G 07320 Bacterial genetics
Classification: J 02727 Amino acids, peptides and proteins
Classification: O 4080 Pollution - Control and Prevention

Classification: Q1 01421 Migrations and rhythms
Classification: Q5 01503 Characteristics, behavior and fate
Subfile: ASFA 3: Aquatic Pollution & Environmental Quality; ASFA 1: Biological Sciences & Living Resources; Oceanic Abstracts; Microbiology Abstracts B: Bacteriology; Genetics Abstracts Code: NO TOXICANT.

English

Paudyal, B. P. (Poisoning : Pattern and Profile of Admitted Cases in a Hospital in Central Nepal. *Jnma j nepal med assoc. 2005 jul-sep; 44(159):92-6. [Jnma; journal of the nepal medical association]: JNMA J Nepal Med Assoc*.
Chem Codes: ABSTRACT: An analysis of all poisoning cases admitted in medical and pediatric wards of Patan Hospital for one year (1st Jan to 31st Dec 2004) was carried out. A total of 154 cases were admitted which was 0.8% of total hospital admissions. Females outnumbered males and almost two-thirds patients were young adults (15-34 years). Seasonal variation in poisoning was observed with more cases in the summer months. Organophosphorus compounds (42%), drugs (25%), and zinc phosphide (6.5%) were common poisonings in total and in adult populations, whereas kerosene was the most frequent poisoning in pediatric age group. Paracetamol, benzodiazepines, and tricyclic antidepressants were the most frequently used drugs. The circumstances of poisoning were intentional (75%) and accidental (20%); most of the childhood poisonings were accidental in nature. The mean hospital stay for all type of poisoning was 7.5 days; whereas it was 10.2 days for organophosphorus, 2.5 days for paracetamol, and 1.5 days each for zinc phosphide and kerosene ingestion. Intensive care unit (ICU) service was required in 17% of patients; and almost 25% developed complications. Aspiration pneumonia and respiratory failure were the most frequently observed complications. Ninety four percent of admitted patients recovered completely; leaving a mortality rate of 5%.
MESH HEADINGS: Accidents, Home
MESH HEADINGS: Adolescent
MESH HEADINGS: Adult
MESH HEADINGS: Age Distribution
MESH HEADINGS: Aged
MESH HEADINGS: Child
MESH HEADINGS: Child, Preschool
MESH HEADINGS: Developing Countries
MESH HEADINGS: Emergency Treatment/*methods
MESH HEADINGS: Female
MESH HEADINGS: Hospitalization/statistics &amp
MESH HEADINGS: numerical data
MESH HEADINGS: Hospitals, Community
MESH HEADINGS: Humans
MESH HEADINGS: Incidence
MESH HEADINGS: Intensive Care Units
MESH HEADINGS: Male
MESH HEADINGS: Middle Aged
MESH HEADINGS: Nepal/epidemiology
MESH HEADINGS: Organophosphorus Compounds/*poisoning
MESH HEADINGS: Overdose/mortality
MESH HEADINGS: Phosphines/*poisoning
MESH HEADINGS: Poisoning/*diagnosis/*epidemiology/therapy
MESH HEADINGS: Retrospective Studies
MESH HEADINGS: Risk Assessment
MESH HEADINGS: Sex Distribution
MESH HEADINGS: Suicide, Attempted/statistics &amp
MESH HEADINGS: numerical data
MESH HEADINGS: Survival Analysis
MESH HEADINGS: Zinc Compounds/*poisoning Code: HUMAN HEALTH.

eng

Plumlee, K. H. (2001). Pesticide Toxicosis in the Horse. *Vet. Clin. North Am., Equine Pract.* 17: 491-500.
Chem Codes: Chemical of Concern: ZnP Code : REFS CHECKED,REVIEW.

Potter, W. T., Garry, V. F., Kelly, J. T., Tarone, R., Griffith, J., and Nelson, R. L (1993). Radiometric assay of red cell and plasma cholinesterase in pesticide appliers from Minnesota. *Toxicol. Appl. Pharmacol.* 119: 150-5.
Chem Codes: The uses of radiometric assay to detect anticholinesterases in a human population (N = 80) exposed to a broad spectrum of pesticides was demonstrated. The assay is nondilutional; therefore, anticholinesterase (AChE) agents with low binding affinity can be detected. Initial results showed statistically significant exposure-related decreases in either red cell AChE or plasma cholinesterase activity [(butyryl cholinesterase; BuChE] occurred not only among pesticide appliers who use organophosphates, but also among appliers of the fumigant phosphine. These data extend earlier observations made in lab. animals exposed to this fumigant. Significant exposure-related decreases in AChE activity were seen in herbicide appliers and appear to be assocd. with exposure to the herbicide 2-methoxy-3,6-dichlorobenzoic acid. There was no evidence of exposure-related decreases in BuChE activity in herbicide appliers. In-vivo data, coupled with preliminary in-vitro studies of phosphine (50% AChE inhibition, 10 ppm) and 2-methoxy-3,6-chlorobenzoic acid (50% AChE and BuChE inhibition, 70 ppm), suggested that the radiometric assay can be used to detect a broader spectrum of biol. active anticholinesterase agents. [on SciFinder (R)] TXAPA9 0041-008X Copyright: Copyright (C) 2010 ACS on SciFinder (R))
Database: CAPLUS
Accession Number: AN 1993:197185
Chemical Abstracts Number: CAN 118:197185
Section Code: 59-5
Section Title: Air Pollution and Industrial Hygiene
CA Section Cross-References: 4, 5, 9
Document Type: Journal
Language: written in English.
Index Terms: Blood plasma; Erythrocyte (cholinesterase activity in, occupational exposure to pesticide effect on, radiometric assay of); Hygiene (cholinesterase activity inhibition in organophosphate pesticide exposure in relation to); Pesticides (organophosphate, occupational exposure to, erythrocyte and plasma cholinesterase inhibition by, radiometric assay of); Health hazard (occupational, of organophosphate pesticide, in pesticide applicators, cholinesterase activity inhibition in relation to)
CAS Registry Numbers: 9001-08-5 (Cholinesterase) Role: ADV (Adverse effect, including toxicity), BIOL (Biological study) (in erythrocytes and blood plasma, occupational exposure to organophosphate pesticide effect on, in humans); 1918-00-9; 7803-51-2 (Phosphine) Role: ADV (Adverse effect, including toxicity), BIOL (Biological study) (occupational exposure to, erythrocyte and plasma cholinesterase activity inhibition in, in pesticide workers) radiometric/ assay/ cholinesterase/ pesticide/ worker;/ occupational/ health/ hazard/ pesticide/ exposure Code: HUMAN HEALTH.

Prakash, I. and Mathur, R. P. (1992). Acute Rodenticides. *In: I.Prakash and P.K.Ghosh (Eds.), Rodents in Indian Agriculture, Volume 1, State of the Art, Sci.Publ., Jodhpur, India* 497-515.
Code: REVIEW.

ISBN 81-7233-013-8//

Prakash, I. and Mathur, R. P. (1992). Acute Rodenticides. *In: I.Prakash and P.K.Ghosh (Eds.), Rodents in Indian Agriculture, Volume 1, State of the Art, Sci.Publ., Jodhpur, India* 497-515.
Chem Codes: EcoReference No.: 75528
Chemical of Concern: As,Ba,NaFA,RSG,STCH,Tl,Urea,ZnP Code: REVIEW.

Price, N. R. (1985). The Mode of Action of Fumigants. *Journal of Stored Products Research [J. STORED PROD. RES.]*. 21, 157-164. 1985.
Chem Codes: Descriptors: Article Subject Terms: fumigants
Descriptors: toxicity

Descriptors: Article Taxonomic Terms: Insecta
Abstract: Studies on the action of the widely used fumigants, hydrogen cyanide, phosphine, methyl bromide, carbon tetrachloride, ethylene dichloride, and ethylene dibromide, are reviewed with a view to establishing some of the biochemical lesions responsible for the toxicity of fumigants to insects. The modes of action of ethylene oxide, carbon disulphide, sulphuryl fluoride, and methyl chloroform are also briefly discussed.
English
Publication Type: Journal Article
Publication Type: Review
Classification: Z 05183 Toxicology & resistance
Subfile: Entomology Abstracts Code: REVIEW.

English

Quistad, Gary B., Sparks, Susan E., and Casida, John E (2000). Chemical model for phosphine-induced lipid peroxidation. *Pest Manage. Sci.* 56: 779-783.
Chem Codes: Phosphine (PH3) from hydrolysis of metal phosphides is highly toxic and is important for control of stored-product insect pests (AIP, Mg3P2) and rodents (Zn3P2). This fumigant inhibits respiration and induces lipid peroxidn. in insects and mammals. PH3 (from Mg3P2) and H2O2, acting for 15 min in phosphate buffer (pH 7.4), oxidized cod liver oil (high in unsatd. lipids) to malondialdehyde. Both Mg3P2 and H2O2 were found to be necessary for this lipid peroxidn., which under optimal conditions produced a seven-fold increase in malondialdehyde relative to basal levels in cod liver oil with H2O2, but no PH3. Under the same conditions, 15-, 9- and 2-fold increases in malondialdehyde were obtained from Et arachidonate, Me linoleate and Me oleate. Small amts. of hydroxyl radical from PH3/H2O2 were trapped with salicylic acid. Reactive oxygen species for lipid peroxidn. may therefore be derived from direct reaction of PH3 with H2O2 as an alternative hypothesis to their respiration-linked formation. [on SciFinder (R)] PMSCFC 1526-498X Copyright: Copyright (C) 2010 ACS on SciFinder (R))
Database: CAPLUS
Accession Number: AN 2000:643534
Chemical Abstracts Number: CAN 133:277346
Section Code: 4-4
Section Title: Toxicology
CA Section Cross-References: 5
Document Type: Journal
Language: written in English.
Index Terms: Peroxidation (lipid; phosphine-induced lipid peroxidn.); Cod liver oil Role: BPR (Biological process), BSU (Biological study, unclassified), BIOL (Biological study), PROC (Process) (peroxidn. by hydrogen peroxide in presence of phosphide); Lipids Role: BPR (Biological process), BSU (Biological study, unclassified), BIOL (Biological study), PROC (Process) (peroxidn.; phosphine-induced lipid peroxidn.); Reactive oxygen species Role: BSU (Biological study, unclassified), BIOL (Biological study) (role in lipid peroxidn. by hydrogen peroxide in presence of phosphide)
CAS Registry Numbers: 542-78-9 (Malondialdehyde.) Role: BSU (Biological study, unclassified), MFM (Metabolic formation), BIOL (Biological study), FORM (Formation, nonpreparative) (lipid peroxidn. product by hydrogen peroxide in presence of phosphide); 112-62-9 (Methyl oleate.); 112-63-0 (Methyl linoleate); 1808-26-0 (Ethyl arachidonate) Role: BPR (Biological process), BSU (Biological study, unclassified), BIOL (Biological study), PROC (Process) (peroxidn. by hydrogen peroxide in presence of phosphide); 7803-51-2 (Phosphine); 12057-74-8 (Magnesium phosphide) Role: ADV (Adverse effect, including toxicity), BAC (Biological activity or effector, except adverse), BSU (Biological study, unclassified), BIOL (Biological study) (phosphine-induced lipid peroxidn.); 7782-44-7D (Oxygen) Role: BSU (Biological study, unclassified), BIOL (Biological study) (role in lipid peroxidn. by hydrogen peroxide in presence of phosphide)
Citations: 1) Tomlin, C; The Pesticide Manual, 11 th edn 1997, 967
Citations: 2) World Health Organization; Environ Health Criteria 1988, 73, 1
Citations: 3) Singh, S; Clin Toxicol 1996, 34, 703
Citations: 4) Gupta, S; Clin Toxicol 1995, 33, 19
Citations: 5) Chaudhry, M; Pestic Sci 1997, 49, 213

Citations: 6) Nakakita, H; Nihon Noyaku Gakkaishi (J Pestic Sci) 1976, 1, 235
Citations: 7) Nakakita, H; Nihon Noyaku Gakkaishi (J Pestic Sci) 1987, 12, 299
Citations: 8) Chefurka, W; Pestic Biochem Physiol 1976, 6, 65
Citations: 9) Price, N; Insect Biochem 1980, 10, 147
Citations: 10) Bolter, C; Arch Biochem Biophys 1990, 278, 65
Citations: 11) Bolter, C; Pestic Biochem Physiol 1990, 36, 52
Citations: 12) Chaudhry, M; Pestic Biochem Physiol 1992, 42, 167
Citations: 13) Chugh, S; Indian J Med Res 1996, 104, 190
Citations: 14) Hsu, C; Free Rad Biol Med 2000, 28, 636
Citations: 15) Hsu, C; Toxicol Sci 1998, 46, 204
Citations: 16) Lall, S; Indian J Exper Biol 1997, 35, 1060
Citations: 17) Esterbauer, H; Meth Enzymol 1990, 186, 407
Citations: 18) Tamura, H; J Agric Food Chem 1991, 39, 439
Citations: 19) Yeo, H; Anal Biochem 1994, 220, 391
Citations: 20) Kaur, H; Meth Enzymol 1994, 233, 67
Citations: 21) Miyake, T; Food Chem Toxicol 1996, 34, 1009
Citations: 22) Goswami, M; Indian J Exper Biol 1994, 32, 647
Citations: 23) Lam, W; J Agric Food Chem 1991, 39, 2274
Citations: 24) Kashi, K; Pestic Biochem Physiol 1976, 6, 350
Citations: 25) Ferri, A; Biochem Molec Biol Int 1995, 35, 691
Citations: 26) Halliwell, B; Environ Health Perspect 1994, 102(Suppl 10), 5
Citations: 27) Bond, E; J Stored Prod Res 1967, 3, 289
Citations: 28) Richter, C; Biosci Rep 1997, 17, 53 phosphine/ lipid/ peroxidn Code: IN VITRO.

Ramesh, P. (1992). The Short-Tailed Mole-Rat Nesokia Indica Gray. *In: I.Prakash and P.K.Ghosh (Eds.), Rodents in Indian Agriculture, Volume 1, State of the Art, Sci.Publ., Jodhpur, India* 165-171.
Code: REFS CHECKED/REVIEW.

ISBN 81-7233-013-8//SEARCHED FY05,ALP//

Ramesh, P. (1992). The Short-Tailed Mole-Rat Nesokia indica Gray. *In: I.Prakash and P.K.Ghosh (Eds.), Rodents in Indian Agriculture, Volume 1, State of the Art, Sci.Publ., Jodhpur, India* 165-171.
Chem Codes: Chemical of Concern: ZnP Code: REFS CHECKED,REVIEW.

Rao, A. M. K. M. (1992). Integrated Rodent Management. *In: I.Prakash and P.K.Ghosh (Eds.), Rodents in Indian Agriculture, Volume 1, State of the Art, Sci.Publ., Jodhpur, India* 651-667.
Code: REVIEW.

ISBN 81-7233-013-8//

Rao, A. M. K. M. (1992). Integrated Rodent Management. *In: I.Prakash and P.K.Ghosh (Eds.), Rodents in Indian Agriculture, Volume 1, State of the Art, Sci.Publ., Jodhpur, India* 651-667.
Chem Codes: EcoReference No.: 75527
Chemical of Concern: BDL,ZnP Code: REVIEW.

Reed, Carl and Pan, Hongde (2000). Loss of phosphine from unsealed bins of wheat at six combinations of grain temperature and grain moisture content. *J. Stored Prod. Res.* 36: 263-279.
Chem Codes: Hard red winter wheat (1.4 t) at 11.1 or 13.5% moisture content (wet basis) and 20, 25, or 30 Deg was fumigated with tablets of an aluminum phosphide formulation in unsealed, cylindrical grain bins of corrugated metal. The fumigant leakage rate was manipulated to approx. that commonly encountered in farm and com.-scale bins of this type. Phosphine concn. profiles were recorded and phosphine loss and sorption were characterized to det. which conditions provided the greatest probability of successful fumigation in these bins. Phosphine leakage and sorption were both pos. related to grain temp. and moisture content. The fumigant concn. profiles were compared with previously-published data relating temp. to the developmental rate and fumigant susceptibility of lesser grain borer eggs, which are phosphine-resistant, but become less resistant as they age. The mean phosphine concn. obsd. at the time

corresponding to one-half of the calcd. egg development time was compared to the lethal concn. (LC99) for a 2-day exposure at each temp.-moisture combination. In the low-moisture grain at 20 Deg, the obsd. fumigant concn. was below the lethal concn., due to the long development time under these conditions. At 25 and 30 Deg in the low-moisture wheat, the likelihood of complete kill appeared more favorable because the fumigant concn. remained above the published LC99 for more than half of the egg development time. In the wheat with 13.5% moisture content, rapid fumigant sorption and loss resulted in phosphine concns. below the LC99 at one-half of the development time at 20 or 25 Deg. At 30 Deg, due to the very rapid development rate, the obsd. phosphine concn. exceeded the LC99 half-way through the egg development period despite the rapid rate of fumigant sorption and loss. Repeated fumigation of the same grain reduced the rate at which phosphine sorbed into the grain. [on SciFinder (R)] JSTPAR 0022-474X Copyright: Copyright (C) 2010 ACS on SciFinder (R))
Database: CAPLUS
Accession Number: AN 2000:450775
Chemical Abstracts Number: CAN 133:160840
Section Code: 5-4
Section Title: Agrochemical Bioregulators
Document Type: Journal
Language: written in English.
Index Terms: Fumigation; Temperature effects; Winter wheat (effect of grain temp. and moisture content on phosphine loss and sorption in fumigated unsealed bins of wheat)
CAS Registry Numbers: 7803-51-2 (Phosphine) Role: AGR (Agricultural use), BIOL (Biological study), USES (Uses) (effect of grain temp. and moisture content on phosphine loss and sorption in fumigated unsealed bins of wheat)
Citations: Annis, P; Proceedings of the International Conference on Controlled Atmospheres and Fumigation of Grain Storages 1993, 299
Citations: Association of Official Analytical Chemists; Official Method 965.17 1995
Citations: ASEAN Food Handling Bureau/ACIAR; Principles and general practice 1989
Citations: Banks, H; Proceedings of an international conference 1990
Citations: Banks, H; ACIAR Proceedings 1989, 25, 96
Citations: Banks, H; Journal of Stored Products Research 1991, 27, 41
Citations: Banks, H; Proceedings of the International Conference on Controlled Atmospheres and Fumigations of Grain Storages 1993, 241
Citations: Berck, B; Journal of Agricultural and Food Chemistry 1968, 16, 419
Citations: Bruce, R; Journal of Agricultural and Food Chemistry 1962, 10, 18
Citations: Cotton, R; Journal of Economic Entomology 1963, 29, 514
Citations: Dumas, T; Journal of Agricultural and Food Chemistry 1980, 28, 337
Citations: Hagstrum, D; Annals of the Entomological Society of America 1988, 81, 539
Citations: Harris, A; GASGA Seminar on fumigation technology in developing countries 1986, 56
Citations: Hilton, H; Journal of Agricultural and Food Chemistry 1972, 20, 1209
Citations: Hole, B; Journal of Stored Products Research 1976, 12, 235
Citations: Hoseney, R; Principles of Cereal Science and Technology 1994
Citations: Lingren, D; Journal of Stored Products Research 1966, 2, 141
Citations: Mulhearn, P; Journal of Stored Products Research 1976, 12, 129
Citations: Rauscher, H; Journal of Agricultural and Food Chemistry 1972, 20, 331
Citations: Reed, C; Kansas Ag Exp Station Bull 660 1993
Citations: Robinson, J; Journal of Stored Products Research 1970, 6, 133
Citations: Sinha, A; Bulletin of Grain Technology 1979, 17, 48
Citations: Skidmore, J; Thesis Kansas State University 1989
Citations: SAS Institute; SAS User's Guide 1985
Citations: Tkachuk, R; Cereal Chemistry 1972, 49, 258
Citations: Winks, R; Journal of Stored Products Research 1984, 20, 45
Citations: Winks, R; Proceedings of the 4th International Working Conference on Stored-Product Protection 1987, 335 phosphine/ wheat/ fumigation/ moisture/ temp Code: FATE.

Rulon, R. A., Maier, D. E., and Boehlje, M. D. (1999). A Post-Harvest Economic Model to Evaluate Grain Chilling as an Ipm Technology. *Journal of Stored Products Research, 35 (4) pp. 369-383, 1999.*

Chem Codes: Descriptors: Economic analysis
Descriptors: Costs and benefits
Descriptors: Grain chilling
Descriptors: Insect control
Descriptors: Integrated pest management
Abstract: A spreadsheet model was developed to evaluate the economic costs of new post-harvest integrated pest management technologies, such as grain chilling, against traditional pest control methods, such as phosphine fumigation. The model considers 34 factors including electrical power consumption, capital investment cost, chemical costs, and less quantifiable factors such as worker safety, environmental issues, and changes in end-product value. When applied to the storage of popcorn, a high value speciality crop, and wheat, the annual operating costs of chilled aeration compared to phosphine fumigation with ambient aeration were up to 128 and 300% lower, respectively. The effect of high capital investment with low variable costs, as with chilled aeration, was compared to the low capital investment and high variable costs of phosphine fumigation using a multi-year Net Present Cost (NPC) model. For the case studies evaluated, the NPC of chilled aeration ranged from -122 to 197% of that for in-house fumigation with ambient aeration. Chilling of popcorn became economically feasible if a premium of less than one cent per retail bag could be obtained for popcorn labeled post-harvest pesticide-free. Chiller unit prices of US dollar-sign 80,000-90,000 were found to be a reasonable capital expenditure for this alternative integrated pest management technology.
17 refs.
English
Publication Type: Journal
Publication Type: Article
Country of Publication: United Kingdom
Classification: 92.10.4.6 CROP SCIENCE: Crop Protection: Integrated pest management
Subfile: Plant Science Code: MODELING.

English

Rush, G. F., Smith, P. F., Hoke, G. D., Alberts, D. W., Snyder, R. M., and Mirabelli, C. K. (The Mechanism of Acute Cytotoxicity of Triethylphosphine Gold(I) Complexes. Ii. Triethylphosphine Gold Chloride-Induced Alterations in Mitochondrial Function. *Toxicol appl pharmacol. 1987, sep 30; 90(3):391-400. [Toxicology and applied pharmacology]: Toxicol Appl Pharmacol*.
Chem Codes: ABSTRACT: Triethylphosphine gold complexes have therapeutic activity in the treatment of rheumatoid arthritis. Many of these compounds are also highly cytotoxic in vitro to a variety of tumor and non-tumor cell lines. Triethylphosphine gold chloride (TEPAu) is highly cytotoxic to isolated rat hepatocytes at concentrations greater than 25 microM. The earliest changes that could be detected in hepatocytes included bleb formation in the plasma membrane, alterations in the morphology of mitochondria, and rapid decreases in cellular ATP and oxygen consumption. The degradation of ATP could be followed sequentially through ADP and AMP and was ultimately accounted for entirely as xanthine. The sum of adenine and xanthine-derived nucleotides remained constant throughout the experiments. TEPAu (50 microM) caused a significant decrease in the hepatocyte ATP/ADP ratio and energy charge within 5 min. The antioxidant, N,N'-diphenyl-p-phenylenediamine (DPPD), which blocked TEPAu-induced malondialdehyde formation but not cell death, also had no effect on the decreases in oxygen consumption, ATP, ATP/ADP ratio, or energy charge. In isolated rat liver mitochondria, TEPAu (1 microM) caused significant reductions in carbonyl cyanide-4-trifluoromethoxyphenylhydrazone (FCCP) (uncoupled)-stimulated respiration. TEPAu (5 microM) inhibited state 3 respiration and the respiratory control ratio without affecting state 4 respiration and caused a rapid dissipation of the mitochondrial-membrane hydrogen-ion gradient (membrane potential). Concentrations greater than 5 microM also inhibited state 4 respiration. TEPAu caused a concentration-dependent inhibition of FCCP-stimulated respiration with pyruvate/malate and succinate as substrates but had not effect on ascorbate/tetramethyl-p-phenylenediamine-supported respiration. The inhibition of state 4 respiration and FCCP-stimulated respiration by TEPAu (10 microM) could be reversed by the addition of 2 mM dithiothreitol. Dithiothreitol also partially protected cells from TEPAu-induced injury and reversed the TEPAu-induced depletion in cellular ATP. These data indicate that TEPAu may be acting functionally as a respiratory site II inhibitor, similar to antimycin. The reversal of TEPAu-induced inhibition of mitochondrial respiration and cell

lethality by dithiothreitol suggests that mitochondrial thiols may be involved.
MESH HEADINGS: Adenosine Triphosphate/metabolism
MESH HEADINGS: Animals
MESH HEADINGS: Anti-Inflammatory Agents, Non-Steroidal/*toxicity
MESH HEADINGS: Carbonyl Cyanide p-Trifluoromethoxyphenylhydrazone/pharmacology
MESH HEADINGS: Cell Survival/drug effects
MESH HEADINGS: Dithiothreitol/pharmacology
MESH HEADINGS: Electron Transport/drug effects
MESH HEADINGS: Male
MESH HEADINGS: Mitochondria, Liver/*drug effects/metabolism
MESH HEADINGS: Organogold Compounds
MESH HEADINGS: Organometallic Compounds/*toxicity
MESH HEADINGS: Organophosphorus Compounds/*toxicity
MESH HEADINGS: Oxygen Consumption/drug effects
MESH HEADINGS: *Phosphines
MESH HEADINGS: Rats
MESH HEADINGS: Rats, Inbred Strains Code: IN VITRO.

eng

Salunke B.K., Prakash, K., Vishwakarma K.S., and Maheshwari V.L. (2009). Plant Metabolites: an Alternative and Sustainable Approach Towards Post Harvest Pest Management in Pulses. *Physiology and Molecular Biology of Plants, vol. 15, no. 3, pp. 185-197, 2009.*
Chem Codes: Descriptors: Hexapoda
Abstract: Grain legumes are an important source of proteins in vegetarian diet besides their role in biological nitrogen fixation. They are prone to heavy pest infestation both on and off the field. Pest associated losses are an important contributing factor towards declining per capita availability of grain legumes. Synthetic chemical pesticides have played an important role in crop preservation, however their incessant use has posed several environmental and human health concerns. Methyl bromide and phosphine are commonly used for the post harvest preservation of grain legumes. However, the former has to be phased out by 2015 as per the Montreal protocol whereas the latter is showing development of resistance to it by the insects. In the light of this, alternative, safer and sustainable strategies are needed for crop protection. Plants can serve as a rich source of bioactive chemicals for this purpose. Both primary as well as secondary metabolites can be evaluated against the target pests. The paper reviews the status of research in the area of use of plant metabolites in post harvest pest management of grain legumes. Â© Prof. H.S. Srivastava Foundation for Science and Society 2009.
Publication Type: Journal
Publication Type: Review
74 refs.
Country of Publication: India
Subfile: Plant Science; CABS 23e2b5c7-14f3-4fa7-b6d1csamfg301
English
DOI: 10.1007/s12298-009-0023-9
Classification: CABSCLASS
Classification: 92.10.4.3, PLANT SCIENCE
Classification: CROP SCIENCE
Classification: Crop Protection
Classification: Pests
Classification: CABSCLASS
Classification: 92.10.4.5, PLANT SCIENCE
Classification: CROP SCIENCE
Classification: Crop Protection
Classification: Biological control Code: REVIEW.

English

Saxena, Y. (1993). Histopathological and Biochemical Impact of Zinc Phosphide on Rattus Rattus Rufescens. *In: V.P.Agrawal, S.A.H.Abidi, and G.P.Verma (Eds.), Seminar on Environmental Impact on Aquatic & Terrestiral Habitats, Dec.1991, Berhampur, India* 163-170.
Code: REFS CHECKED/REVIEW.

ECOSSL Invert Final list// Bibliography search completed 11/97 / //

Saxena, Y. (1993). Histopathological and Biochemical Impact of Zinc Phosphide on Rattus rattus Rufescens. *In: V.P.Agrawal, S.A.H.Abidi, and G.P.Verma (Eds.), Seminar on Environmental Impact on Aquatic & Terrestiral Habitats, Dec.1991, Berhampur, India* 163-170.
Chem Codes: Chemical of Concern: Zn,ZnP Code: REFS CHECKED,REVIEW.

Schoof, H. F. (1970). Zinc Phosphide as a Rodenticide. *Pest Control* 38: 38, 42-44.
Chem Codes: Chemical of Concern: ZnP Code: NO DURATION.

Scudamore, K. A. and Goodship, G. (1986). Determination of Phosphine Residues in Fumigated Cereals and Other Foodstuffs. *Pestic sci* 17: 385-395.
Chem Codes: ABSTRACT: BIOSIS COPYRIGHT: BIOL ABS. RRM NUTS FUMIGANT GRAIN PRODUCTS FOOD RESIDUE DETECTION LIMIT
MESH HEADINGS: FOOD TECHNOLOGY
MESH HEADINGS: FRUIT
MESH HEADINGS: NUTS
MESH HEADINGS: VEGETABLES
MESH HEADINGS: CEREALS
MESH HEADINGS: FOOD TECHNOLOGY
MESH HEADINGS: FOOD ANALYSIS
MESH HEADINGS: FOOD TECHNOLOGY
MESH HEADINGS: FOOD-PROCESSING INDUSTRY
MESH HEADINGS: FOOD TECHNOLOGY
MESH HEADINGS: FOOD ADDITIVES/POISONING
MESH HEADINGS: FOOD ADDITIVES/TOXICITY
MESH HEADINGS: FOOD CONTAMINATION
MESH HEADINGS: FOOD POISONING
MESH HEADINGS: FOOD PRESERVATIVES/POISONING
MESH HEADINGS: FOOD PRESERVATIVES/TOXICITY
MESH HEADINGS: HERBICIDES
MESH HEADINGS: PEST CONTROL
MESH HEADINGS: PESTICIDES
MESH HEADINGS: ARACHNIDA
MESH HEADINGS: ENTOMOLOGY/ECONOMICS
MESH HEADINGS: INSECTICIDES
MESH HEADINGS: PEST CONTROL
MESH HEADINGS: PESTICIDES
KEYWORDS: Food Technology-Fruits
KEYWORDS: Food Technology-Cereal Chemistry
KEYWORDS: Food Technology-Evaluations of Physical and Chemical Properties (1970-)
KEYWORDS: Food Technology-Preparation
KEYWORDS: Toxicology-Foods
KEYWORDS: Pest Control
KEYWORDS: Economic Entomology-Chemical and Physical Control Code: FOOD.

eng

Sheikher, C. and Jain, S. D. (1991). Rodent Damage and Control in Pecan Orchards. *Proc.Indian Natl.Sci.Acad.Part B* 57: 391-396 .
Code: MIXTURE.

Singh, S., Bhalla, A., Verma, S. K., Kaur, A., and Gill, K. (Cytochrome-C Oxidase Inhibition in 26 Aluminum Phosphide Poisoned Patients. *Clin toxicol (phila). 2006; 44(2):155-8. [Clinical toxicology (philadelphia, pa.)]: Clin Toxicol (Phila).*
Chem Codes: COMMENTS: Comment in: Clin Toxicol (Phila). 2007 Jun-Aug;45(5):461; author reply 462 (medline /17503245)
ABSTRACT: INTRODUCTION: Aluminum phosphide (ALP) is used worldwide to fumigate grain. ALP poisoning, though reported from different parts of world, is most common in north, northwest and central India. In the presence of moisture, ALP liberates phosphine, which is highly toxic. The mechanism of action of phosphine is not known though experimental studies show that it inhibits cytochrome-c oxidase leading to inhibition of mitochondrial oxidative phosphorylation. PATIENTS AND METHODS: We estimated cytochrome-c oxidase activity in platelets of patients who had ingested ALP and compared them with those in healthy controls and in patients with shock due to other causes (cardiogenic shock, septic shock and hemorrhagic shock). RESULTS: After analysis of variance using Kruskal-Wallis test followed by Mann Whitney U test, significant inhibition of cytochrome-c oxidase activity could be found in ALP-poisoned patients compared to healthy controls ($z = -5.513$, $p < 0.001$) and in patients with shock due to other causes ($z = -2.344$; $p < 0.05$). There was no significant difference in inhibition in those who survived ALP poisoning compared to those who died from ALP poisoning ($t = 0.02768$; $p > 0.05$). CONCLUSION: Though inhibition of cytochrome-c oxidase in platelets does not have prognostic value, it suggests that interruption of mitochondrial oxidative phosphorylation as a result of cytochrome-c oxidase inhibition may lead to multi-organ dysfunction and therapeutic strategies to maintain enzyme activity may help in managing these patients.
MESH HEADINGS: Adolescent
MESH HEADINGS: Adult
MESH HEADINGS: Aluminum Compounds/*poisoning
MESH HEADINGS: Analysis of Variance
MESH HEADINGS: Electron Transport Complex IV/*antagonists &amp
MESH HEADINGS: inhibitors
MESH HEADINGS: Enzyme Inhibitors/*poisoning
MESH HEADINGS: Female
MESH HEADINGS: Humans
MESH HEADINGS: Male
MESH HEADINGS: Middle Aged
MESH HEADINGS: Phosphines/*poisoning
MESH HEADINGS: Poisoning/enzymology/mortality
MESH HEADINGS: Survival Analysis Code: HUMAN HEALTH.

eng

Smith, P. F., Hoke, G. D., Alberts, D. W., Bugelski, P. J., Lupo, S., Mirabelli, C. K., and Rush, G. F. (Mechanism of Toxicity of an Experimental Bidentate Phosphine Gold Complexed Antineoplastic Agent in Isolated Rat Hepatocytes. *J pharmacol exp ther. 1989, jun; 249(3):944-50. [The journal of pharmacology and experimental therapeutics]: J Pharmacol Exp Ther*.
Chem Codes: ABSTRACT: SK&F 104524 (bis-[1,2 bis(diphenylphosphino)-ethane]gold(l) lactate) [(Au(dppe)2]+) is an experimental antineoplastic agent that is hepatotoxic in vivo in the dog as well as highly cytotoxic to isolated canine hepatocytes in vitro. Preliminary studies in isolated dog hepatocytes have indicated that [Au(dppe)2]+ causes an increase in hepatocyte respiration and a decrease in cellular ATP. The purpose of the present investigation was to characterize [Au(dppe)2]+-induced cytotoxicity and biochemical lesions in the intact cell and to correlate these changes with mitochondrial function. The uptake of [14C][Au(dppe)2]+ by rat hepatocytes was rapid, reaching a maximum by 30 min. [Au(dppe)2]+ was distributed throughout the hepatocyte and associated rapidly with mitochondria, nuclei, cytosol and cellular membranes. [Au(dppe)2]+ caused cell lethality in a concentration-dependent fashion; although 5 microM did not cause any changes in lactic dehydrogenase leakage, 20 microM produced 100% cell death by 120 min. [Au(dppe)2]+ also caused concentration-dependent bleb formation of the hepatocyte plasma membrane, increased oxygen consumption and loss of ATP within 30 min. ATP loss was associated with transient increases in AMP and ADP and a profound drop in the ATP/ADP ratio and energy charge. Total nucleotides (adenine and xanthine nucleotides) remained constant. The pattern of glutathione depletion

coincided with that of lactic dehydrogenase leakage. Electron microscopy of hepatocytes exposed to [Au(dppe)2]+ for 30 min revealed depletion of glycogen granules and marked swelling of mitochondria. In isolated rat liver mitochondria, [Au(dppe)2]+ caused a stimulation of state 4 respiration and loss of the respiratory control ratio. [Au(dppe)2]+ also relieved the oligomycin-induced inhibition of state 3 (ADP-stimulated) respiration.(ABSTRACT TRUNCATED AT 250 WORDS)
MESH HEADINGS: Animals
MESH HEADINGS: Antineoplastic Agents/pharmacokinetics/*toxicity
MESH HEADINGS: Cell Membrane/drug effects
MESH HEADINGS: Cell Survival/drug effects
MESH HEADINGS: Cells, Cultured
MESH HEADINGS: Glutathione/metabolism
MESH HEADINGS: Liver/*drug effects/metabolism/ultrastructure
MESH HEADINGS: Male
MESH HEADINGS: Mitochondria, Liver/drug effects
MESH HEADINGS: Organogold Compounds
MESH HEADINGS: Organometallic Compounds/pharmacokinetics/*toxicity
MESH HEADINGS: Organophosphorus Compounds/pharmacokinetics/*toxicity
MESH HEADINGS: Oxygen Consumption/drug effects
MESH HEADINGS: Rats
MESH HEADINGS: Rats, Inbred Strains Code: IN VITRO.

eng

Srivastava, D. C. (1992). Sugarcane. *In: I.Prakash and P.K.Ghosh (Eds.), Rodents in Indian Agriculture, Volume 1, State of the Art, Sci.Publ., Jodhpur, India* 231-248.
Code: REVIEW.

ISBN 81-7233-013-8//

Srivastava, D. C. (1992). Sugarcane. *In: I.Prakash and P.K.Ghosh (Eds.), Rodents in Indian Agriculture, Volume 1, State of the Art, Sci.Publ., Jodhpur, India* 231-248.
Chem Codes: EcoReference No.: 75523
Chemical of Concern: BDF,BDL,WFN,ZnP Code: REVIEW.

Sterner, R. T. (1999). Pre-Baiting for Increased Acceptance of Zinc Phosphide Baits by Voles: an Assessment Technique. *Pestic.Sci.* 55: 553-557.
Chem Codes: Descriptors: Acute rodenticide
Descriptors: Bait effectiveness
Descriptors: Microtus spp
Descriptors: Pre-baits
Descriptors: Vole control
Descriptors: Zinc phosphide
Abstract: During a product-performance test of 2% zinc phosphide (Zn inferior 3P inferior 2) steam- rolled-oat groats (11.2 kg ha superior - superior 1) to control voles (Microtus spp) in alfalfa (Medicago sativa), randomly located, brushed-dirt plots were used to assess broadcast distribution and removal/acceptance of placebo particles. Results showed that the Spyker registered trade mark sign Model-75 Spreaders were calibrated adequately, with placebo baits broadcast uniformly onto plots [x horizontal bar plus-or-minus SD=3.5 (plus-or-minus 2.7) groats 930 cm superior - superior 1]. Acceptance of the placebos by voles increased rapidly - 28% and 60% by 24 h and 48 h post-broadcast, respectively. Analyses of variance confirmed the uniformity (non-significance) of particles broadcast among enclosures/plots and the significantly greater removal/acceptance of placebos across days. This technique affords an objective decision-making tool for applicators and researchers applying Zn inferior 3P inferior 2 baits in field situations an objective technique of assessing pre-bait acceptance that should improve efficacy of the rodenticide.
14 refs.
English

Publication Type: Journal
Publication Type: Article
Country of Publication: United Kingdom
Classification: 92.10.1.5 CROP SCIENCE: Crop Physiology: Fertilizer effects
Classification: 92.10.2.1 CROP SCIENCE: Agronomy and Horticulture: Cereals
Classification: 92.10.4.6 CROP SCIENCE: Crop Protection: Integrated pest management
Classification: 92.11.1.8 PLANT PATHOLOGY AND SYMBIOSES: Plant Pathology: Other pests
Subfile: Plant Science Code: NO TOX DATA.

PESTICIDE SCIENCE//

Sterner, R. T. (1999). Pre-baiting for Increased Acceptance of Zinc Phosphide Baits by Voles: An Assessment Technique. *Pestic. Sci.* 55: 553-557.
Chem Codes: Chemical of Concern: ZnP Code: NO TOX DATA.

Stowe, C. M., Nelson, R., Werdin, R., Fangmann, G., Fredrick, P., Weaver, G., and Arendt, T. D. (1978). Zinc Phosphide Poisoning in Dogs. *J. Am. Vet. Med. Assoc.* 173: 270.
Chem Codes: Chemical of Concern: ZnP Code: INCIDENT.

Subiah, K. S. and Mathur, R. P. (1992). Andamans With Special Reference to Oil Palm Plantations. *In: I.Prakash and P.K.Ghosh (Eds.), Rodents in Indian Agriculture, Volume 1, State of the Art, Sci.Publ., Jodhpur, India* 343-356.
Code: REFS CHECKED/REVIEW.

ISBN 81-7233-013-8//FY05, ALP//

Subiah, K. S. and Mathur, R. P. (1992). Andamans with Special Reference to Oil Palm Plantations. *In: I.Prakash and P.K.Ghosh (Eds.), Rodents in Indian Agriculture, Volume 1, State of the Art, Sci.Publ., Jodhpur, India* 343-356.
Chem Codes: Chemical of Concern: BDL,WFN,ZnP Code: REFS CHECKED,REVIEW.

Taylor, R. W. D. (1994). Methyl Bromide - Is There Any Future for This Noteworthy Fumigant? *Journal of Stored Products Research [J. STORED PROD. RES.].* 30, 253-260. 1994.
Chem Codes: Descriptors: Article Subject Terms: air pollution
Descriptors: fumigants
Descriptors: stored products
Abstract: For many years methyl bromide has played a significant role in controlling insect pests in durable and perishable agricultural commodities, pests in the soil and in structures. Although about 10% of the chemical produced is used globally for disinfesting stored products its importance for that purpose cannot be understressed, since it is the only remaining fumigant in worldwide use other than phosphine. Methyl bromide is the only fumigant available for quarantine treatment of commodities where rapid disinfestation techniques are essential. Although methyl bromide arises from natural sources, principally the oceans, most of the chemical found in the stratosphere is now thought to originate from man-made sources. Methyl bromide has been formally listed as an ozone-depleting substance by the Parties to the Montreal Protocol, with agreement from 1995 to limit future production. Reviews of both the current uses of methyl bromide, and of potential substitutes should permit a decision on a general control scheme for the chemical by 1995. Separately, in the U.S.A., under the Clean Air Act, methyl bromide will be phased out by the year 2001. Other countries or political unions are also currently examining the feasibility of reducing the quantities of methyl bromide used. Future restrictions on methyl bromide are expected to have a particular impact on developing countries, particularly those exporting agricultural products. This has been recognized in exempting these countries from the controls to be introduced in 1995. Despite many uncertainties regarding its role in ozone depletion it seems certain that methyl bromide will, eventually, be removed from the list of the few remaining products capable of preventing pest damage to food and other valuable commodities.
English
Publication Type: Journal Article
Classification: Z 05183 Toxicology & resistance

Subfile: Entomology Abstracts Code: REVIEW.

English

Tiwary, A. K., Puschner, B., Charlton, B. R., and Filigenzi, M. S. (Diagnosis of Zinc Phosphide Poisoning in Chickens Using a New Analytical Approach. *Avian dis. 2005, jun; 49(2):288-91. [Avian diseases]: Avian Dis*.

Chem Codes: ABSTRACT: Approximately 200 chickens were found dead after the flooring of a slat-and-litter house was breached. No clinical signs of illness were observed in the surviving birds. During necropsy, rolled oats were found in the chickens' crops and gizzards, and the contents had a petroleum-like odor. Histopathologic examination revealed severe pulmonary edema and congestion of the chickens' lungs, hearts, livers, and kidneys. Based on the history and necropsy findings, zinc phosphide exposure was suspected. Diagnosis of zinc phosphide poisoning has previously been based on history of exposure, identification of the bait material in the gastrointestinal tract, and chemical detection of phosphine gas. However, currently available diagnostic methods are nonconfirmatory, and may produce false positive results. The objective of this case report was to determine whether the sudden death described in these chickens was caused by the ingestion of zinc phosphide, by developing a sensitive and highly specific gas chromatography/mass spectrometry (GC/MS) methodology for analysis of the gastrointestinal samples submitted to the laboratory. It was also found that the determination of zinc concentrations in liver or kidney tissue or stomach contents is not a reliable indicator of zinc phosphide poisoning.
MESH HEADINGS: Animals
MESH HEADINGS: *Chickens
MESH HEADINGS: Crop, Avian/chemistry
MESH HEADINGS: Evaluation Studies as Topic
MESH HEADINGS: Fatal Outcome
MESH HEADINGS: Gas Chromatography-Mass Spectrometry/methods/*veterinary
MESH HEADINGS: Gastrointestinal Contents/*chemistry
MESH HEADINGS: Gizzard/chemistry
MESH HEADINGS: Kidney/chemistry
MESH HEADINGS: Liver/chemistry
MESH HEADINGS: Phosphines/*poisoning
MESH HEADINGS: Poisoning/diagnosis/veterinary
MESH HEADINGS: Poultry Diseases/*diagnosis
MESH HEADINGS: Zinc Compounds/*poisoning Code: NO CONC.

eng

Va(circumflex)lcu, C. M. and Schlink, K. (2006). Reduction of Proteins During Sample Preparation and Two-Dimensional Gel Electrophoresis of Woody Plant Samples. *Proteomics, 6 (5) pp. 1599-1605, 2006*.

Chem Codes: Descriptors: Reducing agent
Descriptors: Sample preparation
Descriptors: Two-dimensional gel electrophoresis
Descriptors: Woody plant
Abstract: Protein extraction procedure and the reducing agent content (DTT, dithioerythritol, tributyl phosphine and tris (2-carboxyethyl) phosphine (TCEP)) of the sample and rehydration buffers were optimised for European beech leaves and roots and Norway spruce needles. Optimal extraction was achieved with 100 mM DTT for leaves and needles and a mixture of 2 mM TCEP and 50 mM DTT for roots. Performing IEF in buffers containing hydroxyethyldisulphide significantly enhanced the quality of separation for all proteins except for acidic root proteins, which were optimally focused in the same buffer as extracted. (copyright) 2006 Wiley-VCH Verlag GmbH & Co. KGaA.
55 refs.
English
Publication Type: Journal
Publication Type: Article
Country of Publication: Germany
Classification: 92.1.1.6 BIOCHEMISTRY: Molecular Biology: Proteins

Subfile: Plant Science Code: METHODS.

English

Wang, C. H., Niu, X. J., and Ren, H. Q. (2006). Distribution and Correlation Analysis of Phosphorus in Lake Sediments. *Journal of Agro-Environment Science [J. Agro-Environ. Sci.]*. 25, 25: 1328-1332. 20 Oct 2006., 1328-1332.
Chem Codes: Descriptors: Article Subject Terms: Aluminium
Descriptors: Aluminum
Descriptors: Calcium
Descriptors: Correlation Analysis
Descriptors: Correlation analysis
Descriptors: Iron
Descriptors: Lake Sediments
Descriptors: Lake deposits
Descriptors: Lakes
Descriptors: Mathematical models
Descriptors: Organic Matter
Descriptors: Organic matter
Descriptors: Organic phosphorus
Descriptors: Phosphorus
Descriptors: Sediment Distribution
Descriptors: Sediment chemistry
Descriptors: Sediments
Descriptors: Temporal variations
Descriptors: organic phosphorus
Descriptors: spatial distribution
Abstract: Distribution and correlation analysis of phosphorus in lake sediments were investigated. In lake sediments, iron phosphorus and calcium phosphorus are the main phosphorus species. The phosphorus species in lake sediments show distinct characters of spatial distribution, but have no obvious temporal variations. The correlation between phosphine and phosphorus suggests that the amount of phosphine(y) in the sediments is related to aluminum bounded phosphorus(x), soluble phosphorus, total phosphorus, iron phosphorus and calcium phosphorus (x). The correlation equation can be described as: y=ax+b, r super(2) greater than or equal to 0.24(n=25). The amount of phosphine has no obvious correlation with organic phosphorus, occluded phosphorus, exchange phosphorus and organic matter in sediments. So, inorganic phosphorus may most probably be the precursor of phosphine, and it thus plays an important role in the formation of phosphine. Phosphorus in lake sediments may be released by phosphine.
English
Publication Type: Journal Article
Environmental Regime: Freshwater
Classification: SW 0850 Lakes
Classification: AQ 00003 Monitoring and Analysis of Water and Wastes
Classification: Q5 01503 Characteristics, behavior and fate
Classification: P 2000 FRESHWATER POLLUTION
Classification: EN 40 Water Pollution: Monitoring, Control & Remediation
Subfile: ASFA 2: Ocean Technology Policy & Non-Living Resources; Pollution Abstracts; ASFA 3: Aquatic Pollution & Environmental Quality; Aqualine Abstracts; Water Resources Abstracts Code: FATE.

English

Waterford, C. J. and Winks, R. G (1986). Loss rates of phosphine associated with various materials used in laboratory fumigation apparatus. *J. Stored Prod. Res.* 22: 25-7.
Chem Codes: Relative loss rates of PH3 assocd. with the use of PVC [9002-86-2], nylon, Teflon [9002-84-0], silicone rubber and stainless steel [12597-68-1] were detd. from tubing of these materials mounted in a small glass chamber. The order of the loss rates was glass < stainless steel < Teflon < nylon < PVC <

silicone rubber. Sorption accounted for most of the loss of all materials except silicone rubber and was greatest on PVC. Permeation of PH3 through silicone rubber tubing was excessive and rendered this material unsuitable for use. [on SciFinder (R)] JSTPAR 0022-474X Copyright: Copyright (C) 2010 ACS on SciFinder (R))
Database: CAPLUS
Accession Number: AN 1986:181595
Chemical Abstracts Number: CAN 104:181595
Section Code: 5-1
Section Title: Agrochemical Bioregulators
Document Type: Journal
Language: written in English.
Index Terms: Pipes and Tubes (phosphine loss assocd. with various materials of, in fumigation app.); Fumigation (phosphine loss assocd. with various materials used in app. for); Rubber Role: BIOL (Biological study) (phosphine losses assocd. with use of, in fumigation app.); Polyamides Role: BIOL (Biological study) (phosphine losses assocd. with use of, in insect fumigation app.)
CAS Registry Numbers: 7803-51-2 Role: BIOL (Biological study) (fumigation studies with, lab. app. for); 9002-84-0; 9002-86-2; 12597-68-1 Role: BIOL (Biological study) (phosphine losses assocd. with use of, in fumigation app.) phosphine/ loss/ tubing/ material;/ fumigation/ app/ phosphine Code: FATE.

Waters, S. B., Devesa, V., Del Razo, L. M., Styblo, M., and Thomas, D. J. (Endogenous Reductants Support the Catalytic Function of Recombinant Rat Cyt19, an Arsenic Methyltransferase. *Chem res toxicol. 2004, mar; 17(3):404-9. [Chemical research in toxicology]: Chem Res Toxicol.*
Chem Codes: ABSTRACT: The postulated scheme for the metabolism of inorganic As involves alternating steps of oxidative methylation and of reduction of As from the pentavalent to the trivalent oxidation state, producing methylated compounds containing AsIII that are highly reactive and toxic. S-Adenosyl-L-methionine:AsIII methyltransferase purified from rat liver catalyzes production of methyl and dimethyl arsenicals from inorganic As. This protein is encoded by the cyt19 gene orthologous with cyt19 genes in mouse and human. The reductants dithiothreitol or tris(2-carboxylethyl)phosphine support catalysis by recombinant rat cyt19 (rrcyt19). Coupled systems containing an endogenous reductant (thioredoxin/thioredoxin reductase/NADPH, glutaredoxin/glutathione/glutathione reductase/NADPH, or lipoic acid/thioredoxin reductase/NADPH) support inorganic As methylation by rrcyt19. Although glutathione alone does not support rrcyt19's catalytic function, its addition to reaction mixtures containing other reductants increases the rate of As methylation. Aurothioglucose, an inhibitor of thioredoxin reductase, reduces the rate of As methylation by rrcyt19 in thioredoxin-supported reactions. Addition of guinea pig liver cytosol, a poor source of endogenous As methyltransferase activity, to reaction mixtures containing rrcyt19 shows that endogenous reductants in cytosol support the enzyme's activity. Methylated compounds containing either AsIII or AsV are detected in reaction mixtures containing rrcyt19, suggesting that cycling of As between oxidation states is a component of the pathway producing methylated arsenicals. This enzyme may use endogenous reductants to reduce pentavalent arsenicals to trivalency as a prerequisite for utilization as substrates for methylation reactions. Thus, cyt19 appears to possess both AsIII methyltransferase and AsV reductase activities.
MESH HEADINGS: Animals
MESH HEADINGS: Arsenic/*metabolism
MESH HEADINGS: Cloning, Molecular
MESH HEADINGS: Cytosol/enzymology
MESH HEADINGS: Dithiothreitol/metabolism
MESH HEADINGS: Methylation
MESH HEADINGS: Methyltransferases/*metabolism
MESH HEADINGS: *Oxidation-Reduction
MESH HEADINGS: Phosphines/metabolism
MESH HEADINGS: Rats
MESH HEADINGS: Recombinant Proteins/*metabolism
MESH HEADINGS: Reducing Agents/*metabolism
MESH HEADINGS: Thioredoxin-Disulfide Reductase/metabolism Code: IN VITRO.

eng

World Health, O. R. G. A. (1973). Safe Use of Pesticides. Twentieth Report of the Who Expert Committee on Insecticides; World Health Organization Technical Report Series. *VNO 513, World Health Organization, Geneva Switzerland* 55 p.
Code: REFS CHECKED/REVIEW.

Was EcoRef # 39445// FY08 08/07//NO TITLES//

World Health, O. R. G. A. (1973). Safe Use of Pesticides. Twentieth Report of The WHO Expert Committee on Insecticides; World Health Organization Technical Report Series. *VNO 513, World Health Organization, Geneva Switzerland* 55 p.
Chem Codes: Chemical of Concern: ANTU,AZM,As,AsTO,CBL,CPY,CuS,DDT,DDVP,FNT,FNTH,Hg,MLN,NSH,NaFA,PCP,PPX,RSG,STCH,Sn,TBT,TMMC,TMP,Tl,ZnP Code: REFS CHECKED,REVIEW.

On Order: Potentially Acceptable but Publication has not yet been Received

Al-Hakkak, Z. S. (1989). Mutagenicity of Phosphine Gas in Drosophila melanogaster. *J. Biol. Sci. Res.* 19: 739-745.

Chemical of Concern: MgP,PPHN,ZnP; Habitat: T

Bond, E. J. and Morse, P. M. (1982). Joint Action of Methyl Bromide and Phosphine on Tribolium castaneum (Herbst) (Coleoptera: Tenebrionidae). *J. Stored Prod. Res.* 8: 83-94.

Chemical of Concern: MgP,PPHN,ZnP; Habitat: T

El-Lakwah, F. A., Darwish, A. A., Khattab, M. M., and Abdel-Latif, A. M. (1996). Development of Resistance to Carbon Dioxide and Phosphine in the Red Flour Beetle (Tribolium Castaneum, Herbst). *Ann. Agric. Sci., Mostohor* 34: 1907-1923.

Chemical of Concern: MgP,PPHN,ZnP; Habitat: T

El-Lakwah, F. A., Khattab, M. M., Rady, G. H., and Halawa, Z. A. (1995). Selection of the Cowpea Beetle Callosobruchus Maculatus (Fab.) for Resistance to Phosphine, Carbon Dioxide and Their Mixture in the Laboratory and Biological Observations on the Resistant Strains. *Ann. Agric. Sci., Mostohor* 33: 843-863.

Chemical of Concern: MgP,PPHN,ZnP; Habitat: T

Hayne, D. W. (1951). Zinc Phosphide: Its Toxicity to Pheasants and Effect of Weathering Upon its Toxicity to Mice. *Mich. Agric. Exp. Stn. Q. Bull.* 33: 412-425.

Chemical of Concern: ZnP; Habitat: T

Target: Toxicity of Chemical on Intended Pest

Aterrado, E. D. and Abad, R. G. (1987). Rat Damage Assessment and Control Studies in Coconut II. Comparative Effects of Brodifacoum Wax Blocks and Two Bait Formulations of Zinc Phosphide Rodenticide Against Rats Attacking Coconuts. *Philipp.J.Coconut Stud.* 12: 7-13.

EcoReference No.: 86003
Chemical of Concern: BDF,ZnP; Habitat: T; Effect Codes: POP; Code: TARGET (BDF,ZnP).

Bai, K. M. and Majumder, S. K. (1982). Enhancement of Mammalian Safety by Incorporation of Antimony Potassium Tartrate in Zinc Phosphide Baits. *Bull. Environ. Contam. Toxicol.* 29: 107-114.

EcoReference No.: 47234

Chemical of Concern: Zn,ZnP; Habitat: T; Code: OK (Zn), TARGET (ZnP).

Brown, P. R., Huth, N. I., Banks, P. B., and Singleton, G. R. (2007). Relationship Between Abundance of Rodents and Damage to Agricultural Crops. *Agriculture, Ecosystems and Environment* 120: 405-415.

Chemical of Concern: ZnP; Habitat: T; Code: TARGET(ZnP).

Ja(dieresis)kel, T., Khoprasert, Y., Promkerd, P., and Hongnark, S. (2006). An Experimental Field Study to Assess the Effectiveness of Bait Containing the Parasitic Protozoan Sarcocystis Singaporensis for Protecting Rice Crops Against Rodent Damage. *Crop Protection* 25: 773-780.

Chemical of Concern: ZnP; Habitat: T; Code: TARGET(ZnP).

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Chemical of Concern: CPC,ZnP; Habitat: T; Effect Codes: POP; Code: TARGET (CPC,ZnP).

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Acceptable for EcoTox but not OPP

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Chemical of Concern: BDL,ZnP; Habitat: T; Effect Codes: POP; Code: NO ENDPOINT (BDL,ZnP).

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Chemical of Concern: Zn,ZnP; Habitat: T; Effect Codes: BEH,MOR; Code: NO ENDPOINT (Zn,ZnP).

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Chemical of Concern: ZnP; Habitat: T; Effect Codes: MOR; Code: NO CONTROL (ZnP).

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Chemical of Concern: ZnP; Habitat: T; Effect Codes: BEH,MOR; Code: NO CONTROL (ZnP), NO ENDPOINT (ZnP).

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Chemical of Concern: ZnP; Habitat: T; Effect Codes: MOR,PHY; Code: NO CONTROL (ZnP), NO ENDPOINT (ZnP).

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EcoReference No.: 118331
Chemical of Concern: NaCN,NaFA,ZnP; Habitat: T; Effect Codes: BEH; Code: NO ENDPOINT (NaCN,NaFA,ZnP), TARGET (NaCN,NaFA,ZnP).

Higuchi, S. (1981). Vole Control by Rodenticides in Afforested Land. *Rev. Plant Prot. Res.* 14: 169-186.

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Chemical of Concern: ZnP; Habitat: T; Effect Codes: POP; Code: NO ENDPOINT (ZnP).

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EcoReference No.: 18105
Chemical of Concern: DDT,DLD,EN,MLN,NaFA,STCH,TXP,ZnP; Habitat: AT; Effect Codes: ACC,MOR,POP; Code: NO CONTROL (DDT,NaFA,STCH,ZnP), NO ENDPOINT (DDT,DLD,EN,MLN,TXP).

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EcoReference No.: 58906
Chemical of Concern: DDT,PHSL,ZnP; Habitat: T; Effect Codes: BEH,CEL,GRO,MOR,PHY,REP; Code: NO CONTROL (PHSL,ZnP), OK (DDT).

Janda, J. and Bosseova, M. (1970). The Toxic Effect of Zinc Phosphide Baits on Partridges and Pheasants. *J. Wildl. Manag.* 34: 220-223.

EcoReference No.: 150781
Chemical of Concern: ZnP; Habitat: T; Effect Codes: MOR; Code: NO CONTROL (ZnP).

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EcoReference No.: 87349
Chemical of Concern: LEC,ZnP; Habitat: T; Effect Codes: BEH,MOR; Code: NO CONTROL (ZnP), OK (LEC).

Keith, J. O. (1966). Insecticide Contaminations in Wetland Habitats and Their Effects on Fish-Eating Birds. *J. Appl. Ecol.* 3: 71-85.

EcoReference No.: 96802
Chemical of Concern: 24D,24DXY,AND,CBL,DDT,DEM,DLD,EN,EPRN,ES,HPT,PRN,TXP,ZnP; Habitat: T; Effect Codes: MOR,PHY,POP; Code: NO CONTROL (24D,24DXY,AND,CBL,DDT,DEM,DLD,EN,EPRN,ES,HPT,PRN,TXP,ZnP), NO ENDPOINT (24D,24DXY,AND,CBL,DDT,DEM,DLD,EN,EPRN,ES,HPT,PRN,TXP,ZnP).

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EcoReference No.: 108789
Chemical of Concern: BML,ZnP; Habitat: T; Effect Codes: POP; Code: NO ENDPOINT (BML,ZnP).

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EcoReference No.: 50926
Chemical of Concern: BDF,Tl,ZnP; Habitat: T; Effect Codes: BEH; Code: NO ENDPOINT (BDF,Tl,ZnP).

Khan, A. A. and Ahmad, M. (1991). Field Efficacy of the Second Generation Anticoagulants, Zinc Phosphide and Bromethalin Against Meriones hurrianae Jerdon. *Indian J. Plant Prot.* 19: 43-48.

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Chemical of Concern: BDF,BDL,BML,ZnP; Habitat: T; Effect Codes: BEH,MOR,POP; Code: NO ENDPOINT (BDF,BDL,BML,ZnP).

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Chemical of Concern: BDF,BML,ZnP; Habitat: T; Effect Codes: POP; Code: NO ENDPOINT (BDF,BML,ZnP).

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EcoReference No.: 101322
Chemical of Concern: CPY,STCH,ZnP; Habitat: T; Effect Codes: POP; Code: NO ENDPOINT (CPY,STCH,ZnP), TARGET (STCH,ZnP).

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EcoReference No.: 75546
Chemical of Concern: BDF,ZnP; Habitat: T; Effect Codes: BEH,MOR; Code: NO CONTROL (BDF,ZnP).

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EcoReference No.: 75654
Chemical of Concern: BDF,BDL,ZnP; Habitat: T; Effect Codes: BEH; Code: LITE EVAL CODED (BDF), NO ENDPOINT (BDL,ZnP), TARGET (BDF,BDL,ZnP).

Parshad, V. R. and Malhi, C. S. (1995). Comparative Efficacy of Two Methods of Delivering an Anticoagulant Rodenticide to Three Species of South Asian Rodents. *Int. Biodeterior. Biodegrad.* 36: 89-102.

EcoReference No.: 75952
Chemical of Concern: ZnP; Habitat: T; Effect Codes: BEH,MOR,POP; Code: NO ENDPOINT (ZnP).

Parshad, V. R., Malhi, C. S., Ahmad, N., and Gupta, B. (1987). Rodent Damage and Control in Peanut Fields in India. *Peanut Sci.* 14: 4-6.

EcoReference No.: 79138
Chemical of Concern: BDF,BDL,ZnP; Habitat: T; Effect Codes: POP; Code: NO ENDPOINT (BDF,BDL,ZnP), TARGET (BDF,BDL,ZnP).

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Chemical of Concern: BDL,CLC,ZnP; Habitat: T; Effect Codes: BEH; Code: NO ENDPOINT (ZnP), OK (BDL,CLC).

Poche, R. M. and Mian, M. Y. (1986). Effectiveness of Four Rodenticides in Deepwater Rice. *Z. Angew. Zool.* 73: 37-48.

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Chemical of Concern: BDF,ZnP; Habitat: T; Effect Codes: POP; Code: NO ENDPOINT (BDF,ZnP).

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EcoReference No.: 90246
Chemical of Concern: DBAC,DFT,DNB,ZnP; Habitat: T; Effect Codes: BEH,MOR; Code: NO CONTROL (DBAC,DFT,DNB,ZnP), TARGET (DFT,ZnP).

Proulx, G. (1998). Evaluation of Strychnine and Zinc Phosphide Baits to Control Northern Pocket Gophers (Thomomys talpoides) in Alfalfa Fields in Alberta, Canada. *Crop Prot.* 17: 135-138.

EcoReference No.: 75465
Chemical of Concern: STCH,ZnP; Habitat: T; Effect Codes: POP; Code: NO ENDPOINT (STCH,ZnP).

Ramesh, P. (1987). Two Baiting Methods for Nesokia indica Gray, Their Relative Efficacy and Economics. *Indian J. Plant Prot.* 15: 174-175.

EcoReference No.: 75477
Chemical of Concern: ZnP; Habitat: T; Effect Codes: MOR; Code: NO CONTROL (ZnP), NO ENDPOINT (ZnP).

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EcoReference No.: 75143
Chemical of Concern: ZnP; Habitat: T; Effect Codes: MOR; Code: NO ENDPOINT (ZnP).

Robertson, A. J., Campbell, J. G., and Graves, D. N. (1945). Experimental Zinc Phosphide Poisoning in Fowls. *J. Comp. Path. Ther.* 55: 290-300.

EcoReference No.: 150642
Chemical of Concern: ZnP; Habitat: T; Effect Codes: MOR; Code: NO CONTROL (ZnP).

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EcoReference No.: 150507
Chemical of Concern: ZnP; Habitat: T; Effect Codes: BEH; Code: NO ENDPOINT (ZnP), TARGET (ZnP).

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Chemical of Concern: BDL,CLC,ZnP; Habitat: T; Effect Codes: POP; Code: NO ENDPOINT (BDL,CLC,ZnP).

Shumake, S. A., Hakim, A. A., and Gaddis, S. E. (2002). Carbon Disulfide Effects on Pre-Baited vs. Non-Pre-Baited Rats Exposed to Low Dosage Zinc Phosphide Rodenticide Bait. *Crop Prot.* 21: 545-550.

EcoReference No.: 75542
Chemical of Concern: CBNDS,ZnP; Habitat: T; Effect Codes: BEH,MOR; Code: LITE EVAL CODED (CBNDS), NO CONTROL (ZnP), TARGET (ZnP) .

Soni, G. R. and Prakash, I. (1988). Mitigation of Poison Shyness in Desert Gerbil by Adding Conspecific Sebum of Ventral Scent Marking Gland and Urine in Poison Baits. *Indian J. Exp. Biol.* 26: 476-478.

EcoReference No.: 150629
Chemical of Concern: ZnP; Habitat: T; Effect Codes: BEH; Code: NO CONTROL (ZnP), NO ENDPOINT (ZnP), TARGET (ZnP).

Sterner, R. T., Ramey, C. A., Edge, W. D., Manning, T., Wolff, J. O., and Fagerstone, K. A. (1996). Efficacy of Zinc Phosphide Baits to Control Voles in Alfalfa - an Enclosure Study. *Crop Prot.* 15: 727-734.

EcoReference No.: 75461
Chemical of Concern: ZnP; Habitat: T; Effect Codes: POP; Code: NO ENDPOINT (ZnP).

Sterner, Ray T. and Ramey, C. A. (2002). An Index Technique to Monitor Broadcast Calibration and Bait Pick up, plus Rodent and Avian Sign Under Arid Conditions. *Pest Manag. Sci.* 58: 385-391.

EcoReference No.: 75712
Chemical of Concern: ZnP; Habitat: T; Effect Codes: BEH,POP; Code: NO ENDPOINT (ZnP).

Excluded

Aktas, Y. K. and Ibar, H. (2007). Determination of Cd, Mn, Sb, Ni and Fe in Water Samples After Preconcentration on Bentonite Modified With Trioctyl Phosphine Oxide. *Fresenius Environmental Bulletin [Fresenius Environ. Bull.]*. 16, 11-13. 2007.
Chem Codes: Abstract: Bentonite modified by the addition of trioctyl phosphine oxide (TO-B) is developed for the separation and preconcentration of Cd, Mn, Sb, Ni and Fe, prior to their determination by flame atomic absorption spectrometry (FAAS). Separation and preconcentration of the above metals have been investigated by a column method using TO-B as adsorbent, and analytes were quantitatively retained at pH 6.0. The elements collected were completely recovered with 1 mol/L of nitric acid. Low blank values of the collector have served as important advantage, and recoveries were 98.3%, 98.6%, 100%, 98.1% and 100% for Cd, Mn, Sb, Ni and Fe, respectively. The relative standard deviations were found to be 1.0-4.0%.

Detection limits (3 sigma) were 0.25 mu g L super(-1) for Cd, 0.19 mu g L super(-1) for Mn, 2.3 mu g L super(-1) for Sb, 0.17 mu g L super(-1) for Ni and 0.12 mu g L super(-1) for Fe. The method was practically applied analysing the studied elements in wastewaters. The method can be characterized with fastness, simplicity, quantitative recovery, and high reproducibility.
Descriptors: Article Subject Terms: Cadmium
Descriptors: Oxides
Descriptors: Bentonite
Descriptors: Metals
Descriptors: Adsorbents
Descriptors: Reproducibility
Descriptors: Standard Deviation
Descriptors: Detection Limits
Descriptors: Spectral Analysis
Descriptors: Water analysis
Descriptors: Adsorption
Descriptors: Chemical analysis
Descriptors: Methodology
Classification: SW 3010 Identification of pollutants
Classification: Q5 01502 Methods and instruments
Classification: Q2 02182 Methods and instruments
Classification: EE 50 Water & Wastewater Treatment
Publication Type: Journal Article
Subfile: Environmental Engineering Abstracts; Water Resources Abstracts; ASFA 2: Ocean Technology Policy & Non-Living Resources; ASFA 3: Aquatic Pollution & Environmental Quality
English Code: CHEM METHODS.

Al-Azzawi, Mohammad J., Al-Hakkak, Zuhair S., and Al-Adhami, Balqies W (1990). In vitro inhibitory effects of phosphine on human and mouse serum cholinesterase. *Toxicol. Environ. Chem.* 29: 53-6.
Chem Codes: Cholinesterase activity was detd. in mouse and human sera after exposure to different concns. of phosphine gas and for various exposure times. The results showed significant redns. in the enzyme activity of both types of sera. This effect was correlated with both concn. and exposure time. At a short exposure time of 30 min, only the activity of mouse serum cholinesterase was reduced. [on SciFinder (R)] TECSDY 0277-2248 Copyright: Copyright (C) 2010 ACS on SciFinder (R))
Database: CAPLUS
Accession Number: AN 1991:19150
Chemical Abstracts Number: CAN 114:19150
Section Code: 4-3
Section Title: Toxicology
Document Type: Journal
Language: written in English.
Index Terms: Blood serum (cholinesterase of, of humans and lab. animals, phosphine effect on)
CAS Registry Numbers: 7803-51-2 (Phosphine) Role: BIOL (Biological study) (cholinesterase of blood serum of humans and lab. animals response to); 9001-08-5 (Cholinesterase) Role: BIOL (Biological study) (of blood serum, of humans and lab. animals, phosphine effect on) phosphine/ cholinesterase/ serum/ species Code: HUMAN HEALTH.

Anger, Francoise, Paysant, Francois, Brousse, Florent, Le Normand, Isabelle, Develay, Patrick, Gaillard, Yvan, Baert, Alain, Le Gueut, Marie Annick, Pepin, Gilbert, and Anger, Jean-Pierre (2000). Fatal aluminum phosphide poisoning. *J. Anal. Toxicol.* 24: 90-92.
Chem Codes: A 39-yr-old man committed suicide by ingestion of aluminum phosphide, a potent mole pesticide, which was available at the victim's workplace. The judicial authority ordered an autopsy, which ruled out any other cause of death. The victim was discovered 10 days after the ingestion of the pesticide. When aluminum phosphide comes into contact with humidity, it releases large quantities of hydrogen phosphine (PH3), a very toxic gas. Macroscopic examn. during the autopsy revealed a very important asphyxia syndrome with major visceral congestion. Blood, urine, liver, kidney, adrenal, and heart samples were analyzed. Phosphine gas was absent in the blood and urine but present in the brain (94 mL/g), the

liver (24 mL/g), and the kidneys (41 mL/g). High levels of phosphorus were found in the blood (76.3 mg/L) and liver (8.22 mg/g). Aluminum concns. were very high in the blood (1.54 mg/L), brain (36 mg/g), and liver (75 mg/g) compared to the usual published values. Microscopic examn. revealed congestion of all the organs studied and obvious asphyxia lesions in the pulmonary parenchyma. All these results confirmed a diagnosis of poisoning by aluminum phosphide. This report points out that this type of poisoning is rare and that hydrogen phosphine is very toxic. The phosphorus and aluminum concns. obsd. and their distribution in the different viscera are discussed in relation to data in the literature. (c) 2000 Preston Publications. [on SciFinder (R)] JATOD3 0146-4760 Copyright: Copyright (C) 2010 ACS on SciFinder (R))
Database: CAPLUS
Accession Number: AN 2000:177248
Chemical Abstracts Number: CAN 132:289710
Section Code: 4-2
Section Title: Toxicology
Document Type: Journal
Language: written in English.
Index Terms: Adrenal gland; Asphyxia; Blood analysis; Brain; Forensic analysis; Heart; Kidney; Liver; Lung; Urine analysis (fatal aluminum phosphide poisoning); Death (suicide; fatal aluminum phosphide poisoning)
CAS Registry Numbers: 7803-51-2 (Phosphine); 20859-73-8 (Aluminum phosphide) Role: ADV (Adverse effect, including toxicity), ANT (Analyte), ANST (Analytical study), BIOL (Biological study) (fatal aluminum phosphide poisoning); 7429-90-5 (Aluminum); 7723-14-0 (Phosphorus) Role: ANT (Analyte), BPR (Biological process), BSU (Biological study, unclassified), ANST (Analytical study), BIOL (Biological study), PROC (Process) (fatal aluminum phosphide poisoning)
Citations: 1) Singh, S; Clin Toxicol 1996, 34(6), 703
Citations: 2) Jayaraman, K; Nature 1991, 353(6343), 377
Citations: 3) Tracqui, A; J Forensic Sci 1995, 40(2), 112
Citations: 4) Chefurka, W; Pestic Biochem Physiol 1976, 6, 350
Citations: 5) Bolter, C; Arch Biochem Biophys 1989, 278(1), 65
Citations: 6) Chugh, S; Indian J Med Res 1996, 104, 190
Citations: 7) Khosla, S; Trop Doct 1992, 22(4), 155
Citations: 8) Chugh, S; Magnesium Res 1997, 10(3), 225
Citations: 9) Singh, U; Indian Pediatr 1997, 34, 650
Citations: 10) Arora, B; J Indian Med Assoc 1995, 93(10), 380
Citations: 11) Chan, L; J Anal Toxicol 1983, 7, 165
Citations: 12) Chugh, S; J Assoc Physicians India 1996, 44(3), 184
Citations: 13) Garry, V; J Lab Clin Med 1993, 122, 739 forensic/ aluminum/ phosphorus/ poisoning/ death
Code: HUMAN HEALTH.

Anon. (1996). Calcium Phosphide. *Dangerous Properties of Industrial Materials Report.* 16, 318-323. 1996.
Chem Codes: Descriptors: Article Subject Terms: Rodenticides
Descriptors: edema
Descriptors: gastrointestinal tract
Descriptors: irritation
Descriptors: lung
Abstract: This monograph of calcium phosphide provides general health hazard data on the chemical, including symptoms of exposure.
Publication Type: Journal Article
Classification: X 24131 Acute exposure
Subfile: Toxicology Abstracts Code: REVIEW.

Bakoss, P., Jarekov&Aacute, J, and Labuda, M. (An Attempt to Control a Natural Focus of Leptospirosis Grippotyphosa by Rodenticide--a Long-Term Study (1977-2004) . *Ann agric environ med. 2007; 14(1):51-6. [Annals of agricultural and environmental medicine : aaem]: Ann Agric Environ Med.*
Chem Codes: ABSTRACT: The purpose of the study was to suppress a known natural focus of field fever exerting an influence on animal hosts of leptospires--small terrestrial mammals (s.t.m.) by rodenticide.

After repeated application of the zinc phosphide rodenticide, the s.t.m. were regularly live-trapped and checked for leptospirosis by dark-field microscopy and culture of their renal tissue and serological examination. Isolated leptospira strains were typed by help of rabbit factor sera. The deratization influenced the s.t.m. structure considerably: the proportion of the dominant Microtus arvalis subjects--the main reservoirs of Leptospira kirschneri serovar Grippotyphosa--were gradually and substantially reduced and, contrarily, the percentage of the potential hosts subjects--Clethrionomys glareolus and Apodemus flavicollis--rose decisively over time. Changes in culture and serological positivity for leptospirosis of s.t.m. have also been unregistered. The highest original infestation of M. arvalis have slowly but strongly decreased while that of C. glareolus and A. flavicollis has increased decisively and reached its maximum within the last years of investigation. It is probable that these two animal species have undertaken the leading role in the maintenance of the natural focus of the field fever. In other animal species analogous trends were not registered. Based on these long-term findings, there exists the possibility to suppress only partially and temporarily the epizootic process of leptospirosis in a natural focus that can be desirable in some circumstances (building or free time activities, etc.).
MESH HEADINGS: Animals
MESH HEADINGS: Disease Reservoirs/*veterinary
MESH HEADINGS: Female
MESH HEADINGS: Leptospira/*drug effects
MESH HEADINGS: Leptospirosis/*prevention &amp
MESH HEADINGS: control/transmission
MESH HEADINGS: Longitudinal Studies
MESH HEADINGS: Male
MESH HEADINGS: Mammals/microbiology
MESH HEADINGS: Phosphines/pharmacology
MESH HEADINGS: Population Density
MESH HEADINGS: Population Dynamics
MESH HEADINGS: Rodent Diseases/prevention &amp
MESH HEADINGS: control/transmission
MESH HEADINGS: Rodentia/*microbiology
MESH HEADINGS: Rodenticides/*pharmacology
MESH HEADINGS: Zinc Compounds/pharmacology   Code: HUMAN HEALTH.

Barbosda, A., Rosinova, E., Dempsey, J., and Bonin, A. M (1994). Determination of genotoxic and other effects in mice following short term repeated-dose and subchronic inhalation exposure to phosphine. *Environ. Mol. Mutagen.* 24: 81-8.
Chem Codes: This study reports on effects of phosphine inhalation exposure at up to, and exceeding, occupational relevant levels in a subchronic (0.3, 1.0 and 4.5 ppm, 13 wks) and a short term repeated-dose (5.5 ppm, 2 wks) study in both sexes of Balb-c mice. The following end-points were examd.: micronucleus induction in bone marrow, peripheral blood, spleen lymphocytes and skin keratinocytes, mutations at the hypoxanthine-guanine phosphoribosyl transferase locus in lymphocytes, and wt. grain and relative organ wts. (kidneys, lungs, liver, heart, brain and spleen). After subchronic exposure, there was highly significant neg. linear correlation between proportional wt. gain and exposure in both sexes (multiple linear regression, r = -0.56), with female mice showing a greater effect. Females also showed an increase in relative organ wts. at the highest test dose, in contrast to males where there was a slight decrease. A statistically significant increase in micronucleus frequency was seen in the bone marrow and spleen lymphocytes of both sexes, but only at the highest concn. The short term repeated-dose study revealed a slight decrease in wt. again in both sexes, with a greater effect in females. It is concluded that phosphine is weakly genotoxic in both sexes of mice, and has an effect on wt. gain. However, the weak genotoxic effect may not be biol. significant as it was seen only in the subchronic study and only at the highest test concn. of 4.5 ppm (approaching the LD50). Although such exposure conditions are unlikely to be encountered in an occupational environment, cautions should continue to be exercised in the use of phosphine until more data become available. [on SciFinder (R)] EMMUEG 0893-6692 Copyright: Copyright (C) 2010 ACS on SciFinder (R))
Database: CAPLUS
Accession Number: AN 1994:624094
Chemical Abstracts Number: CAN 121:224094

Section Code: 4-6
Section Title: Toxicology
Document Type: Journal
Language: written in English.
Index Terms: Spleen (phosphine effect on micronucleated erythrocytes from spleen); Organ (phosphine effect on organ wt. in relation to genotoxicity); Animal growth (phosphine effect on wt. gain in relation to genotoxicity); Mutagens (phosphine genotoxicity after inhalation in relation to mutagens); Sex (phosphine genotoxicity and sex role); Mutation (phosphine induction of mutation in spleen lymphocyte); Lymphocyte (spleen; phosphine induction of mutation in spleen lymphocyte); Animal breathing (inhalation, phosphine genotoxicity after inhalation); Skin (keratinocyte, phosphine induction of micronucleus formation in skin keratinocyte); Cell nucleus (micro-, phosphine effect on micronucleus formation in polychromatic erythrocyte in relation to genotoxicity); Health (occupational, phosphine genotoxicity after inhalation in relation to occupational health); Erythrocyte (polychromatic, micronucleated; phosphine effect on micronucleus formation in polychromatic erythrocyte in relation to genotoxicity)
CAS Registry Numbers: 7803-51-2 (Phosphine) Role: ADV (Adverse effect, including toxicity), BIOL (Biological study) (phosphine genotoxicity after inhalation) genotoxicity/ inhalation/ phosphine Code: INHALE.

Barrettto, H. H. C., Inomata, O. N. K., and Lara, W. H. (1984). Determination of Phosphin Residues in Foods. *Revista do Instituto Adolfo Lutz [REV. INST. ADOLFO LUTZ.]*. 44, 149-153. 1984.
Chem Codes: Original Title: Determinacao de residuos de fosfina em alimentos
Descriptors: Article Subject Terms: food
Descriptors: pesticide residues
Descriptors: Article Geographic Terms: Brazil
Abstract: Phosphin is an agricultural spray which is much used in Brazil. Because of its toxicity at even low concentrations, 45 samples of various foods were examined by the spectrophotometric procedure. Residues were found in 77.8% of the specimens. Levels ranged from 0.01 to 5.5 mg/kg.
Published 1987.
English; Portuguese
Publication Type: Journal Article
Classification: X 24120 Food, additives & contaminants
Subfile: Toxicology Abstracts Code: NON-ENGLISH.

Bekon, k. A., Le Torc'h, J. M., and Fleurat-Lessard, F. (1988). A Case of Phosphine Tolerance of a Geographical Strain of Tribolium Castaneum (Herbst) (Col.: Tenebrionidae). *Agronomia Tropical [AGRON. TROP.]*. 43, 59-63. 1988.
Chem Codes: Original Title: Tolerance a la phosphine chez une race geographique de Tribolium castaneum (Herbst) (Col.: Tenebrionidae)
Descriptors: Article Subject Terms: genetic factors
Descriptors: pesticide resistance
Descriptors: strains
Descriptors: Article Taxonomic Terms: Tenebrionidae
Descriptors: Tribolium castaneum
Abstract: After a test fumigation with phosphine on a strain of Tribolium castaneum (Herbst) from Ivory Coast at a higher dosage than the lethal rate for the sensible strains, a small proportion of adults remained alive. An increase of the fumigant dosage on generations from resistant adults made it possible to obtain lines supporting a dosage of 36 and 48 mg multiplied by h multiplied by l super(-1).
English; Spanish
Publication Type: Journal Article
Classification: Z 05219 Population genetics
Classification: Z 05183 Toxicology & resistance
Subfile: Entomology Abstracts Code: NON-ENGLISH.

Bell, C. H (2000). Fumigation in the 21st century. *Crop Prot.* 19: 563-569.
Chem Codes: A review with 39 refs. The last quarter of the 20th century has seen the withdrawal of many

compds. formerly used as fumigants. Me bromide, the fumigant with the widest range of applications is scheduled for worldwide withdrawal from routine use as a fumigant in 2015 under the directive of the Montreal Protocol on ozone-depleting substances. Phosphine, the only other commodity fumigant available worldwide, used principally on bulk grain but also on dried fruit, nuts, cocoa, coffee and bagged rice, is currently under regulatory review in the USA and Europe. The prospects for the continued use of fumigants to protect plant and animal health and commodity trading are discussed in the context of mounting pressures on compds. due to registration requirements, atm. emission controls, fears on safety or health grounds, the incidence of resistance, and the need to achieve increasingly high stds. of pest control in international trade. Some recent research results relating to fumigant toxicity and gas application technol. are presented which indicate ways in which the use of some of the few remaining fumigants can be extended in the 21st century. [on SciFinder (R)] CRPTD6 0261-2194 Copyright: Copyright (C) 2010 ACS on SciFinder (R))
Database: CAPLUS
Accession Number: AN 2000:895590
Chemical Abstracts Number: CAN 134:162043
Section Code: 17-0
Section Title: Food and Feed Chemistry
CA Section Cross-References: 5
Document Type: Journal; General Review
Language: written in English.
Index Terms: Insecticides (fumigants; present and future use of); Fumigants (insecticidal; present and future use of); Controlled atmospheres (present and future use for stored products pest control); Fumigants (present and future use of); Insecticide resistance (present and future use of fumigants); Insect (stored product-infesting; present and future use of fumigants against)
CAS Registry Numbers: 74-83-9 (Methyl bromide); 74-90-8 (Hydrogen cyanide); 109-94-4 (Ethyl formate); 124-38-9 (Carbon dioxide); 463-58-1 (Carbonyl sulfide); 2699-79-8 (Sulfuryl fluoride); 7803-51-2 (Phosphine) Role: BUU (Biological use, unclassified), BIOL (Biological study), USES (Uses) (present and future use as fumigant)
Citations: Banks, H; WO 9313659 1993
Citations: Bell, C; J Stored Prod Res 1976, 12, 77
Citations: Bell, C; Pestic Sci 1988, 24, 97
Citations: Bell, C; Pestic Sci 1992, 35, 255
Citations: Bell, C; Proceedings of the International Conference on Controlled Atmosphere and Fumigation in Stored Products 1996 1997, 263
Citations: Bell, C; Proceedings of the Fifth International Working Conference on Stored-products and Protection 1990 1991, 3, 1769
Citations: Bell, C; J Stored Prod Sci 1999, 35, 233
Citations: Champ, B; Report of the FAO global survey of pesticide susceptibility of stored-product pests 1976, 297
Citations: Chaudhry, M; Proceedings of the International Conference on Controlled Atmosphere and Fumigation in Stored Products 1996 1997, 45
Citations: Conyers, S; J Stored Prod Res 1996, 32, 187
Citations: Conyers, S; HGCA Project Report 1996, 125, 122
Citations: Damarli, E; Acta Hortic 1998, 480, 209
Citations: Desmarchelier, J; Stored-Product Protection: Proceedings of the Sixth International Working Conference on Stored-Products and Protection 1994, 78
Citations: Drinkall, M; Proceedings of the Second International Conference on Insect Pests in the Urban Environment 1996, 525
Citations: Fleurat-Lessard, F; Proceedings of the Fourth International Working Conference on Stored-products and Protection 1986 1987, 208
Citations: Hilton, S; Proceedings of the International Conference on Controlled Atmosphere and Fumigation in Stored Products 1996 1997, 409
Citations: Hole, B; J Stored Prod Res 1976, 12, 235
Citations: McGaughey, W; J Stored Prod Res 1989, 25, 201
Citations: Mills, K; Mitt Dtsch Ges Allg Angew Entomol 1983, 4, 98
Citations: Mills, K; GASGA Seminar on Fumigation Technology in Developing Countries 1986, 119

Citations: Nakakita, H; Stored-Product Protection: Proceedings of the Sixth International Working Conference on Stored-Products and Protection 1994, 126
Citations: Newton, J; Proceedings of the Second International Conference on Insect Pests in the Urban Environment 1996, 329
Citations: Noyes, R; Proceedings of the International Conference on Controlled Atmosphere and Fumigation in Stored Products 1996 1997, 359
Citations: Pacheco, I; Levantamento de resistencia a fosfina em insetos de graos armazenados no Estado de Sao Paulo 1990, 20, 144
Citations: Plarre, R; Pflanzenschutzdrinst 1996, 48, 105
Citations: Price, L; J Stored Prod Res 1988, 24, 51
Citations: Prozell, S; Proceedings of the International Conference on Controlled Atmosphere and Fumigation in Stored Products 1996 1997, 325
Citations: Savvidou, N; BCPC Conference, Pests and Diseases 1994, 449
Citations: Soderstrom, E; J Econ Entomol 1984, 77, 457
Citations: Srivastava, J; Bull Grain Technol 1980, 18, 65
Citations: Taylor, R; GASGA Seminar on Fumigation Technology in Developing Countries 1986, 132
Citations: Tyler, P; Int Pest Control 1983, 25(1), 10
Citations: Ulrichs, C; Stored-Product Protection: Proceedings of the Sixth International Working Conference on Stored-Product Protection 1994, 214
Citations: van Graver, S; Annual International Research Conference on Methyl Bromide Alternatives and Emissions Reductions 1994, 97-1
Citations: Winks, R; Proceedings of the International Conference on Controlled Atmosphere and Fumigation in Stored Products 1996 1997, 293
Citations: Winks, R; Proceedings of the Fifth International Working Conference Stored-Products Protection 1990 1991, 2, 935
Citations: Wontner-Smith, T; HGCA Report 1998, 149, 41
Citations: Wontner-Smith, T; HGCA Project Report 1999, 181, 72
Citations: Zettler, J; Proceedings of the Fifth International Working Conference on Stored-Product Protection 1990 1991, 2, 1075 review/ fumigant/ insecticide/ stored/ product/ pest Code: REVIEW.

Bennett, R. N., Mellon, F. A., Botting, N. P., Eagles, J., Rosa, E. A. S., and Williamson, G. (2002). Identification of the Major Glucosinolate (4-Mercaptobutyl Glucosinolate) in Leaves of Eruca Sativa L. (Salad Rocket). *Phytochemistry, 61 (1) pp. 25-30, 2002*.
Chem Codes: Descriptors: Eruca sativa
Descriptors: 4-Mercaptobutyl glucosinolate
Descriptors: 4-Mercaptobutyl isothiocyanate
Descriptors: Bis-(4-Isothiocyanotobutyl) disulfide
Descriptors: LC/MS
Descriptors: MS/MS
Descriptors: GC/MS
Descriptors: NMR
Abstract: The major and structurally unique glucosinolate (GLS) in leaves of Eruca sativa L. (salad rocket) was identified as 4-mercaptobutyl GLS. Both 4-methylthiobutyl GLS and 4-methylsulfinylbutyl GLS were also present, but at lower concentrations. The 4-mercaptobutyl GLS was observed to oxidise under common GLS extraction conditions, generating a disulfide GLS that may be reduced efficiently by tris(2-carboxyethyl) phosphine hydrochloride (TCEP) to reform the parent molecule. The identities of 4-mercaptobutyl GLS and of the corresponding dimeric GLS were confirmed by LC/MS, MS/MS and NMR. Myrosinase treatment of an enriched GLS fraction or of the purified dimer GLS generated a mixture of unique bi-functional disulfides, including bis-(4-isothiocyanatobutyl) disulfide (previously identified elsewhere). TCEP reduction of the purified dimer, followed by myrosinase treatment, yielded only 4-mercaptobutyl ITC. GLS-derived volatiles generated by autolysis of fresh seedlings and true leaves were 4-mercaptobutyl ITC (from the newly identified GLS), 4-methylthiobutyl ITC (from 4-methylthiobutyl GLS) and 4-methylsulfinylbutyl ITC (from 4-methylsulfinyl-butyl GLS); no unusual bi-functional disulfides were found in fresh leaf autolysate. These results led to the conclusion that, in planta, the new GLS must be present as 4-mercaptobutyl GLS and not as the disulfide found after extraction and sample concentration. This new GLS and its isothiocyanate are likely to contribute to the unique odour and flavour of E. sativa.

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15 refs.
English
Publication Type: Journal
Publication Type: Article
Country of Publication: United Kingdom
Classification: 92.1.6.1 BIOCHEMISTRY: Secondary Products: Synthesis
Subfile: Plant Science Code: NO TOXICANT.

Bhadkambekar, C. A., Swain, K. K., Mukherjee, T., Sarin, R. K., Shukla, S. K., and Kayasth, S. (2008). Zinc as a Marker in Viscera of Suspected Metal Phosphide Poisoning: A Study by Neutron Activation Analysis. *J. Anal. Toxicol.* 32: 760-762.
Chem Codes: Chemical of Concern: ZnP Code: CHEM METHODS.

Bolter, Caroline J. and Chefurka, William (1990). Extramitochondrial release of hydrogen peroxide from insect and mouse liver mitochondria using the respiratory inhibitors phosphine, myxothiazol, and antimycin and spectral analysis of inhibited cytochromes. *Arch. Biochem. Biophys.* 278: 65-72.
Chem Codes: The prodn. of H2O2 by mitochondria isolated from granary weevil (Sitophilus granarius) and mouse liver on exposure to PH3 was studied. Other respiratory inhibitors, antimycin, myxothiazol, and rotenone were used with insect mitochondria. H2O2 was measured spectrophotometrically using yeast cytochrome c peroxidase as an indicator. Insect and mouse liver mitochondria, utilizing endogenous substrate, both produced H2O2 after inhibition by PH3. Insect organelles released 3-fold more H2O2 than did mouse organelles, when exposed to PH3. Prodn. of H2O2 by PH3-treated insect mitochondria increased significantly on addn. of the substrate a-glycerophosphate. Succinate did not enhance H2O2 prodn., however, indicating that the H2O2 did not result from the autoxidn. of ubiquinone. NAD+-linked substrates, malate and pyruvate also had no effect on H2O2 prodn., suggesting that NADH-dehydrogenase was not the source of H2O2. Data obtained using antimycin and myxothiazol, both of which stimulated the release of H2O2 from insect mitochondria, lead to the conclusion that glycerophosphate dehydrogenase is a source of H2O2. The effect of combining PH3, antimycin, and myxothiazol on cytochrome spectra in insect mitochondria was also recorded. PH3 reduced cytochrome c oxidase but none of the other cytochromes in the electron transport chain. There was no movement of electrons to cytochrome b when insect mitochondria were inhibited by PH3. The spectral data show that the inhibitors interact with the respiratory chain in a way that would allow the prodn. of H2O2 from the sites proposed previously. [on SciFinder (R)] ABBIA4 0003-9861 Copyright: Copyright (C) 2010 ACS on SciFinder (R))
Database: CAPLUS
Accession Number: AN 1990:174038
Chemical Abstracts Number: CAN 112:174038
Section Code: 5-4
Section Title: Agrochemical Bioregulators
CA Section Cross-References: 4, 17
Document Type: Journal
Language: written in English.
Index Terms: Liver (from phosphine and other respiratory inhibitors, mitochondrial hydrogen peroxide release in); Mitochondria (hydrogen peroxide release by, of insect and mouse liver, phosphine and other respiratory inhibitors effect on); Sitophilus granarius (hydrogen peroxide release from mitochondria of, phosphine and other respiratory inhibitors effect on)
CAS Registry Numbers: 9075-65-4 Role: BIOL (Biological study) (as source of hydrogen peroxide release from insect and mouse liver mitochondria treated with phosphine); 57-03-4 (a-Glycerophosphate) Role: BIOL (Biological study) (hydrogen peroxide formation by phosphine-treated insect mitochondria increase by); 83-79-4 (Rotenone); 7803-51-2 (Phosphine); 11118-72-2 (Antimycin); 76706-55-3 (Myxothiazol) Role: BIOL (Biological study) (hydrogen peroxide release from insect and mouse liver mitochondria response to); 9001-16-5 (Cytochrome c oxidase) Role: BIOL (Biological study) (phosphine inhibition of, hydrogen peroxide release from insect and mouse mitochondria in relation to); 7722-84-1 (Hydrogen peroxide) Role: BIOL (Biological study) (release of, from insect and mouse liver mitochondria, phosphine and other respiratory inhibitors effect on) hydrogen/ peroxide/ insect/ mammal/ mitochondria/ phosphine Code: IN VITRO.

Brautbar, Nachman and Howard, Jonathan (2002). Phosphine toxicity: Report of two cases and review of the literature. *Toxicol. Ind. Health* 18: 71-75.

Chem Codes: Aluminum phosphide is a commonly used fumigant in the agricultural community. This article reviews the toxic effects of phosphine on the lungs and central nervous system in two workers and reviews the available scientific literature. Education for prevention of exposure and more frequent monitoring for exposure are recommended. [on SciFinder (R)] TIHEEC 0748-2337 Copyright: Copyright (C) 2010 ACS on SciFinder (R))
Database: CAPLUS
Accession Number: AN 2003:610881
Chemical Abstracts Number: CAN 139:295828
Section Code: 59-5
Section Title: Air Pollution and Industrial Hygiene
CA Section Cross-References: 5
Document Type: Journal; General Review
Language: written in English.
Index Terms: Central nervous system; Lung; Occupational health hazard; Occupational safety (two cases and literature on phosphine toxicity)
CAS Registry Numbers: 7803-51-2 (Phosphine); 20859-73-8 (Occupational diseases) Role: ADV (Adverse effect, including toxicity), BIOL (Biological study) (two cases and literature on phosphine toxicity)
Citations: Abdner-Rahman, H; Veterinary and Human Toxicology 1999, 41, 31
Citations: Abdner-Rahman, H; Medicine, Science and the Law 2000, 40, 164
Citations: Burgess, J; Clinical Toxicology 2000, 38, 7
Citations: Ellenhorn, M; Medical toxicology, diagnosis and treatment of human poisoning, second edition
Citations: Khosla, S; Journal of the Association of Physicians of India 1986, 34, 227
Citations: Kurzbauer, H; Neurologia i Neurochirurgia Polska 1987, 20, 415
Citations: Misra, U; Toxicology Letters 1988, 42, 257
Citations: Misra, U; Human Toxicology 1988, 7, 343
Citations: NIOHS Alert; National Occupational Hazard Survey Publication 1999
Citations: Schoonbroodt, D; Acta Clinica Belgica 1992, 47, 280
Citations: Singh, S; Journal of Toxicology Clinical Toxicology 1996, 34, 703
Citations: Siwach, S; Journal of the Association of Physicians of India 1995, 43, 676
Citations: Wilson, R; Journal of the American Medical Association 1982, 244, 148 aluminum/ phosphide/ central/ nervous/ system/ lung/ occupational/ health/ hazard;/ review/ aluminum/ phosphide/ phosphine/ occupational/ health/ hazard Code: HUMAN HEALTH.

Cantrell, F. L. (Look What I Found! Poison Hunting on Ebay. *Clin toxicol (phila). 2005; 43(5):375-9. [Clinical toxicology (philadelphia, pa.)]: Clin Toxicol (Phila).*

Chem Codes: ABSTRACT: BACKGROUND: Many substances deemed too dangerous for commercial use are still available to the general public. The purchase of these substances may potentially place members of the general public at risk for serious poisonings. This study was designed to document the large variety of dangerous poisons readily available on a popular online auction Web site. Methods. Over a 10-month period, the online auction Web site eBays was searched daily using the terms "poison" and "contents." Product name, active ingredients, what form the product is in, amount in container, and relative toxicity rating (Clinical Toxicology of Commercial Products, Gosselin, et al.) were recorded. If available, pictures of the products were saved. RESULTS: One hundred twenty-one individual products were identified. Fifty-five were in solid/tablet form, 37 were powders, and 29 were liquids. Product containers were full for 56 items and partially full for 65. Twenty-four products contained ingredients rated as "supertoxic" and included strychnine (10), arsenic trioxide (8), cyanide (2) and nicotine, pilocarpine, phosphorus, powdered conium maculatum (1 each). Sixty-three products contained "extremely toxic" ingredients including thallium, picrotoxin, soluble barium, antimony, mercury, arsenates, podophyllin, fluoride, zinc phosphide, atropine, scopolamine, and plant extracts of gelsemium, aconite, larkspur, and croton. Twenty-one products contained "very toxic" ingredients including lead, copper, camphor, caffeine, theobromine, creosote, pyrogallic acid, sparteine, quinine, lindane, warfarin, phenol, and digitalis. The remaining 13 were "moderately-slightly toxic." CONCLUSION: While the viability of the labeled ingredients could not be verified, the transportation, handling, and potential utilization of these dangerous poisons by the general public

could result in serious poisonings.
MESH HEADINGS: Agrochemicals/chemistry/economics
MESH HEADINGS: Commerce/economics/*methods
MESH HEADINGS: Cosmetics/chemistry/economics
MESH HEADINGS: Dosage Forms
MESH HEADINGS: Group Purchasing/economics/*methods/statistics &amp
MESH HEADINGS: numerical data
MESH HEADINGS: Hazardous Substances
MESH HEADINGS: Household Products/analysis/economics
MESH HEADINGS: *Internet
MESH HEADINGS: Nonprescription Drugs/chemistry/economics
MESH HEADINGS: Pesticides/chemistry/economics
MESH HEADINGS: Poisons/*chemistry
MESH HEADINGS: Risk Management/legislation &amp
MESH HEADINGS: jurisprudence/methods
MESH HEADINGS: Solvents/chemistry
MESH HEADINGS: Time Factors
MESH HEADINGS: United States
MESH HEADINGS: United States Environmental Protection Agency/legislation &amp
MESH HEADINGS: jurisprudence Code: HUMAN HEALTH.

Carey, R. and Warner, R. D. (1994). National Pesticide Telecommunications Network Clarifies Action of Zinc Phosphide. *J. Am. Vet. Med. Assoc.* 205: 1394-1395 PUBL AS 75522.
Chem Codes: Chemical of Concern: ZnP Code: PUBL AS.

Chin, K. L., Mai, X., Meaklim, J., Scollary, G. R., and Leaver, D. D (1992). The interaction of phosphine with hemoglobin and erythrocytes. *Xenobiotica* 22: 599-607.
Chem Codes : Phosphine progressively converts oxyHb to metHb and hemichrome species, with the product formed being time- and concn.-dependent. The reaction of phosphine with oxyHb leads to the formation of phosphite and phosphate. Incubation of rat erythrocytes with various concns. of phosphine results in the progressive uptake of phosphine by the erythrocytes in a temp.-dependent first-order process. Uptake of phosphine by erythrocytes causes crenation, but conversion of oxyHb to metHb and hemichrome could not be demonstrated. [on SciFinder (R)] XENOBH 0049-8254 Copyright: Copyright (C) 2010 ACS on SciFinder (R))
Database: CAPLUS
Accession Number: AN 1992:442278
Chemical Abstracts Number: CAN 117:42278
Section Code: 4-4
Section Title: Toxicology
Document Type: Journal
Language: written in English.
Index Terms: Phosphates; Phosphites Role: BIOL (Biological study) (as phosphine metabolite in erythrocytes); Hemichromes; Hemoglobins Role: PRP (Properties) (phosphine induction of, in erythrocytes); Erythrocyte (phosphine interaction with); Hemoglobins Role: BIOL (Biological study) (phosphine interaction with); Biological transport (absorption, of phosphine, by erythrocytes)
CAS Registry Numbers: 7803-51-2 (Phosphine) Role: BIOL (Biological study) (Hb and erythrocytes interaction with) phosphine/ erythrocyte/ Hb/ interaction Code: IN VITRO.

Chinnasamy, G. and Rampitsch, C. (2006). Efficient Solubilization Buffers for Two-Dimensional Gel Electrophoresis of Acidic and Basic Proteins Extracted From Wheat Seeds. *Biochimica et Biophysica Acta - Proteins and Proteomics, 1764 (4) pp. 641-644, 2006*.
Chem Codes: Descriptors: Acidic and basic protein
Descriptors: Isoelectric focusing
Descriptors: Protein solubilization
Descriptors: Two-dimensional electrophoresis
Descriptors: Wheat seed

Abstract: Plant tissues are made up of a broad range of proteins with a variety of properties. After extraction, solubilization of a diverse range of plant proteins for efficient proteomic analysis using two-dimensional electrophoresis is a challenging process. We tested the efficiency of 12 solubilization buffers in dissolving acidic and basic proteins extracted from mature seeds of wheat. The buffer containing two chaotropes (urea and thiourea), two detergents (3-[(3-cholamidopropyl) dimethyl-ammonio]-1-propane-sulfonate and N-decyl-N,N-dimethyl-3-ammonio-1-propane-sulfonate), two reducing agents (dithiothreitol and tris (2-carboxyethyl) phosphine hydrochloride) and two types of carrier ampholytes (BioLyte pH 4-6 and pH 3-10) solubilized the most acidic proteins in the pH range between 4 and 7. The buffer made up of urea, thiourea, 3-[(3-cholamidopropyl) dimethyl-ammonio]-1-propane-sulfonate, DeStreak reagent (Amersham Biosciences, Uppsala, Sweden) and immobilized pH gradient buffer, pH 6-11 (Amersham Biosciences) solubilized the most basic proteins in the pH range between 6 and 11. These two buffers produced two-dimensional gels with high resolution, superior quality and maximum number of detectable protein (1425 acidic protein and 897 basic protein) spots. Crown Copyright (copyright) 2005.
14 refs.
English
Publication Type: Journal
Publication Type: Article
Country of Publication: Netherlands
Classification: 92.1.1.6 BIOCHEMISTRY: Molecular Biology: Proteins
Subfile: Plant Science Code: METHODS.

Chopra, G. (1992). Poultry Farms. *In: I.Prakash and P.K.Ghosh (Eds.), Rodents in Indian Agriculture, Volume 1, State of the Art, Sci.Publ., Jodhpur, India* 309-330.
Code: REVIEW.

Chopra, G. (1992). Poultry Farms. *In: I.Prakash and P.K.Ghosh (Eds.), Rodents in Indian Agriculture, Volume 1, State of the Art, Sci.Publ., Jodhpur, India* 309-330.
Chem Codes: EcoReference No.: 75529
Chemical of Concern: BDF,BDL,WFN,ZnP Code: REVIEW.

Collins, A. R., Workman, J. P., and Uresk, D. W. (1984). An Economic Analysis of Black-Tailed Prairie Dog (Cynomys ludovicianus) Control. *J. Range Manag.* 37: 358-361.
Chem Codes: Chemical of Concern: ZnP Code: NO CONC.

Daglish, Gregory J. and Pavic, Hervoika (2009). Changes in phosphine sorption in wheat after storage at two temperatures. *Pest Manage. Sci.* 65: 1228-1232.
Chem Codes: Wheat can be stored for many months before being fumigated with phosphine to kill insects, so a study was undertaken to investigate whether the sorptive capacity of wheat changes as it ages. Wheat was stored at 15 or 25 DegC and 55% RH for up to 5.5 mo, and samples were fumigated at intervals to det. sorption. Sealed glass flasks (95% full) were injected with 1.5 mg L-1 of phosphine based on flask vol. Concns. were monitored for 11 days beginning 2 h after injection. Some wheat samples were refumigated after a period of ventilation. Several fumigations of wheat were conducted to det. the pattern of sorption during the first 24 h. Phosphine concn. declined exponentially with time from 2 h after injection. Rate of sorption decreased with time spent in storage at either 15 or 25 DegC and 55% RH. Rate of sorption tended to be lower when wheat was refumigated, but this could be explained by time in storage rather than by refumigation per se. The data from the 24 h fumigations did not fit a simple exponential decay equation. Instead, there was a rapid decline in the first hour, with phosphine concn. falling much more slowly thereafter. The results have implications for phosphine fumigation of insects in stored wheat. Both the time wheat has spent in storage and the temp. at which it has been stored are factors that must be considered when trying to understand the impact of sorption on phosphine concns. in com. fumigations. Copyright (c) The state of Queensland (through the Department of Employment, Economic Development and Innovation) 2009. Published by John Wiley and Sons, Ltd. [on SciFinder (R)] PMSCFC 1526-498X
Copyright: Copyright (C) 2010 ACS on SciFinder (R))
Database: CAPLUS
Accession Number: AN 2009:1250010
Chemical Abstracts Number: CAN 151:569911

Section Code: 17-4
Section Title: Food and Feed Chemistry
CA Section Cross-References: 5
Document Type: Journal
Language: written in English.
Index Terms: Food preservation; Fumigation; Insecticides; Sorption; Triticum aestivum; Wheat (phosphine sorption in wheat after storage); Storage (temp.; phosphine sorption in wheat after storage)
CAS Registry Numbers: 7803-51-2 (Phosphine) Role: FFD (Food or feed use), BIOL (Biological study), USES (Uses) (phosphine sorption in wheat after storage)
Citations: 1) Daglish, G; Pest Manag Sci 2002, 58, 1015
Citations: 2) Collins, P; J Stored Prod Res 2005, 41, 373
Citations: 3) Lorini, I; Pest Manag Sci 2007, 63, 358
Citations: 4) Nayak, M; Pest Manag Sci 2008, 64, 971
Citations: 5) Reed, C; J Stored Prod Res 2000, 36, 263
Citations: 6) Reddy, P; Pest Manag Sci 2007, 63, 96
Citations: 7) Daglish, G; Pest Manag Sci 2008, 64, 513
Citations: 8) Darby, J; Pest Manag Sci 2008, 64, 519
Citations: 9) Anon; FAO Plant Prot Bull 1975, 23, 12
Citations: 10) VSN International Ltd; GenStat for Windows, Release 11.1 2008
Citations: 11) American Society of Agricultural Engineers; ASAE Standards 1995, D241.4, 422
Citations: 12) Bell, C; J Stored Prod Res 1976, 12, 77
Citations: 13) Hole, B; J Stored Prod Res 1976, 12, 235 phosphine/ fumigation/ wheat/ sorption/ food/ preservation Code: FATE.

Daglish, Gregory J. and Pavic, Hervoika (2008). Effect of phosphine dose on sorption in wheat. *Pest Manage. Sci.* 64: 513-518.
Chem Codes: In spite of the extensive use of phosphine fumigation around the world to control insects in stored grain, and the knowledge that grain sorbs phosphine, the effect of concn. on sorption has not been quantified. A lab. study was undertaken, therefore, to investigate the effect of phosphine dose on sorption in wheat. Wheat was added to glass flasks to achieve filling ratios of 0.25-0.95, and the flasks were sealed and injected with phosphine at 0.1-1.5 mg/L based on flask vol. Phosphine concn. was monitored for 8 days at 25 Deg and 55% relative humidity. When sorption occurred, phosphine concn. declined with time and was .apprx.1st order, i.e. the data fitted an exponential decay equation. Percentage sorption per day was directly proportional to filling ratio, and was neg. correlated with dose for any given filling ratio. Based on the results, a 10-fold increase in dose would result in a halving of the sorption const. and the percentage daily loss. Wheat was less sorptive if it was fumigated for a second time. The results have implications for the use of phosphine for control of insects in stored wheat. This study shows that dose is a factor that must be considered when trying to understand the impact of sorption on phosphine concn., and that there appears to be a limit to the capacity of wheat to sorb phosphine. [on SciFinder (R)] PMSCFC 1526-498X Copyright: Copyright (C) 2010 ACS on SciFinder (R))
Database: CAPLUS
Accession Number: AN 2008:586536
Chemical Abstracts Number: CAN 149:71885
Section Code: 5-4
Section Title: Agrochemical Bioregulators
Document Type: Journal
Language: written in English.
Index Terms: Triticum aestivum; Wheat (effect of phosphine dose on sorption in wheat)
CAS Registry Numbers: 7803-51-2 (Phosphine) Role: AGR (Agricultural use), BSU (Biological study, unclassified), BIOL (Biological study), USES (Uses) (effect of phosphine dose on sorption in wheat)
Citations: 1) Hole, B; J Stored Prod Res 1976, 12, 235
Citations: 2) Price, L; J Stored Prod Res 1988, 24, 51
Citations: 3) Daglish, G; Pest Manag Sci 2002, 58, 1015
Citations: 4) Nayak, M; Pest Manag Sci 2003, 59, 1191
Citations: 5) Collins, P; J Stored Prod Res 2005, 41, 373
Citations: 6) Lorini, I; Pest Manag Sci 2007, 63, 358

Citations: 7) Andrews, A; Stored Product Protection, Proceedings of 6th International Working Conference on Stored-product Protection 1994, 27
Citations: 8) Berck, B; J Agric Food Chem 1968, 16, 419
Citations: 9) Sato, K; Appl Entomol Zool 1974, 9, 127
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Citations: 11) Dumas, T; J Agric Food Chem 1980, 28, 337
Citations: 12) Vincent, L; J Econ Entomol 1971, 64, 122
Citations: 13) Banks, H; Fumigation and Controlled Atmosphere Storage of Grain, Proceedings of International Conference 1990, Proceedings No 25, 96
Citations: 14) Banks, H; Proceedings of International Conference on Controlled Atmosphere and Fumigation in Grain Storages 1993, 241
Citations: 15) Rangaswamy, J; Lebensmittel-Wissenschaft und - Technologie 1993, 26, 447
Citations: 16) Reed, C; J Stored Prod Res 2000, 36, 263
Citations: 17) Reddy, P; Pest Manag Sci 2007, 63, 96
Citations: 18) Benhalima, H; J Stored Prod Res 2004, 40, 241
Citations: 19) Anon; FAO Plant Prot Bull 1975, 23(FAO Method No 16), 12
Citations: 20) GenStat 8 Committee VSN International Limited; Genstat for Windows Release 8.1 2005
phosphine/ sorption/ Triticum Code: FATE.

Darby, James A (2008). A kinetic model of fumigant sorption by grain using batch experimental data. *Pest Manage. Sci.* 64: 519-526.
Chem Codes: Most fumigants are adsorbed by grain at differing rates depending on the fumigant or grain type. Sorption can reduce the concns. of fumigation doses to sublethal levels before grain has been disinfested. A model to predict fumigant losses due to sorption in industrial scenarios is needed. This work studies the kinetics of grain fumigant sorption and develops a new alternative model based upon key factors established from the literature and batch exptl. results. The novel model accounts for linear mass transfer within the grain, irreversible 'binding' and linear partitioning of the fumigant to the grain. Model coeffs. were estd. by minimizing the sum of squared residuals between model predictions and exptl. data. The model was compared with other options including diffusion into spheres, and results for Me bromide and phosphine are provided. The model describes the transient changes of fumigant concns. in both the intergranular air and grain. It provides the capacity to predict fumigant concns. throughout grain stacks for a wide range of scenarios of industrial importance. [on SciFinder (R)] PMSCFC 1526-498X Copyright: Copyright (C) 2010 ACS on SciFinder (R))
Database: CAPLUS
Accession Number: AN 2008:586537
Chemical Abstracts Number: CAN 149:222072
Section Code: 17-4
Section Title: Food and Feed Chemistry
CA Section Cross-References: 5
Document Type: Journal
Language: written in English.
Index Terms: Fumigation; Seed; Simulation and Modeling; Sorption   (kinetic model of fumigant sorption by grain)
CAS Registry Numbers: 74-83-9 (Methyl bromide); 7803-51-2 (Phosphine) Role: AGR (Agricultural use), FFD (Food or feed use), BIOL (Biological study), USES (Uses)   (kinetic model of fumigant sorption by grain)
Citations: 1) Lubatti, O; Nature (London) 1945, 3941, 577
Citations: 2) Ponec, V; Adsorption on Solids (English translation) 1974
Citations: 3) Ruthven, D; Principles of Adsorption and Adsorption Processes 1984
Citations: 4) Treybal, R; Mass-Transfer Operations, 3rd edition 1980, 565
Citations: 5) Berck, B; J Agric Food Chem 1968, 16, 419
Citations: 6) Banks, H; Proceedings of an International Conference on Controlled Atmosphere and Fumigation in Grain Storages 1993, 241
Citations: 7) Lubatti, O; JSCI 1944, 63, 353
Citations: 8) Lindgren, D; J Econ Entomol 1962, 55, 773
Citations: 9) Winteringham, F; JSCI 1946, 65, 140

Citations: 10) Banks, H; SEAMEO BIOTROP Special Publication 1992, 45, 177
Citations: 11) Yonglin, R; J Zhenshuo Grain College 1987, 4, 47
Citations: 12) Ma, Y; AIChE J 1968, 14, 956
Citations: 13) Carman, P; Proc R Soc A 1954, 222, 109
Citations: 14) Vermeulen, T; Perry's Chemical Engineer's Handbook, 6th edition 2001, Section 16
Citations: 15) Lewis, S; JSCI 1946, 65, 149
Citations: 16) Cryer, S; J Agric Food Chem 2005, 53, 4103
Citations: 17) Streck, T; Water Resour Res 1995, 31, 811
Citations: 18) Scudamore, K; Pestic Sci 1970, 1, 14
Citations: 19) Dumas, T; J Agric Food Chem 1980, 28, 337
Citations: 20) Moku, M; Japan Plant Protection Service Research Bulletin (Shokubutsu Boekisho Chosa Kenkyu Hokoku) 1987, 23, 53
Citations: 21) Noack, S; Z Lebensmittel-Untersuchung und Forschung 1983, 174, 1
Citations: 22) Noack, S; Z Lebensmittel-Untersuchung und Forschung 1983, 177, 87
Citations: 23) Meuser, F; Die Muhle und Mischfuttertechnik 1977, 144, 435
Citations: 24) Banks, H; Pesticides and Humid Tropical Grain Storage Systems: Proceedings of an International Seminar 1986, Proceedings No 14, 179
Citations: 25) Shrader, S; Ind Eng Chem Anal Ed 1942, 14, 1
Citations: 26) Disney, R; Radiotracer Studies of Chemical Residues in Food and Agriculture 1972, IAEA-PL-469/13, 99
Citations: 27) Robinson, J; J Stored Prod Res 1970, 6, 133
Citations: 28) Do, D; Adsorption Analysis: Equilibria and Kinetics 1998
Citations: 29) Chang, C; Cereal Chem 1979, 56, 321
Citations: 30) Park, S; PhD Thesis, Kansas State University 1974
Citations: 31) Park, S; Cereal Chem 1975, 52, 611
Citations: 32) Noack, S; Z Lebensmittel-Untersuchung und Forschung 1984, 178, 97
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Citations: 34) Damcevski, K; J Stored Prod Res 2006, 42, 61
Citations: 35) Reuss, R; Advances in Stored Product Protection, Proceedings of the 8th International Working Conference on Stored Product Protection 2003, 533
Citations: 36) Weller, G; Advances in Stored Product Protection, Proceedings of the 8th International Working Conference on Stored Product Protection 2003, 493
Citations: 37) Crank, J; The Mathematics of Diffusion, 2nd edition 1975, 93
Citations: 38) Cofie-Agblor, R; J Stored Prod Res 1998, 34, 159
Citations: 39) Bird, R; Transport Phenomena 1960 model/ fumigant/ sorption/ grain Code: FATE.

Deng Yong-xue, Wang Jin-jun, Ju Yun-mei, and Zhang Hai-yan (2004). Comparison of Fumigation Activities of 9 Kinds of Essential Oils Against the Adults of Maize Weevil, Sitophilus Zeamaise Motschulsky (Coleoptera: Curculionidae). *Chinese Journal of Pesticide Science [Chin. J. Pestic. Sci.]*. 6, 85-88. Sep 2004.

Chem Codes: Descriptors: Article Subject Terms: Essential oils
Descriptors: Fumigants
Descriptors: Toxicity testing
Descriptors: Article Taxonomic Terms: Curculionidae
Descriptors: Sitophilus zeamais

Abstract: By means of sealing jar, fumigant toxicities of the essential oils of Citrus tangerina, Citrus limon, Citrus hongheensis, Litsea cubeba, Mentha spicata, Pinus tabulaeformis, Cinnamoum camphora, Melaleuca alternifolia and Eucalyptus globules on adults of maize weevil, Sitophilus zeamaise Motschulsky were investigated at the dosage of 16 mu L/L and under the exposure times of 24 h, 36 h, 48 h, and 60 h, respectively. The results indicated that fumigation efficacies of the essential oils of Cinnamoum camphora, Melaleuca alternifolia, Citrus limon, Mentha spicata, and Pinus tabulaeformis are better than those of the other four essential oils, and Cinnamoum camphora oil showed the best fumigation toxicity. The LC sub(50)s of the maize weevil adults fumigated by Cinnamoum camphora oil under the exposure times of 12 h, 24 h, 36 h, 48 h and 60 h are 31.43, 11.26,6.16,2.72 and 1.11 mu L/L, respectively. Cinnamoum camphora oil can be considered as a promising alternative substance for methyl bromide and phosphine to control maize weevil.

Chinese; English
Publication Type: Journal Article
Classification: Z 05183 Toxicology & resistance
Subfile: Entomology Abstracts Code: NON-ENGLISH.

Devai Istvan, Delaune Ronald D, Devai Gyorgy, Aradi Csaba, Gori Szilvia, Nagy Alex Sandor, and Talas Zsuzsa (2007). Characterization of Mercury and Other Heavy Metals in Sediment of an Ecological Important Backwater Area of River Tisza (Hungary). *Journal of Environmental Science and Health, Part A: Toxic/Hazardous Substances & Environmental Engineering [J. Environ. Sci. Health, Pt. A: Toxic/Hazard. Subst. Environ. Eng.]*. 42, 42: 859-864. Jun 2007., 859-864.
Chem Codes: Descriptors: Article Subject Terms: Aves
Descriptors: Backwater
Descriptors: Backwaters
Descriptors: Boron
Descriptors: Copper
Descriptors: Fluvial Sediments
Descriptors: Heavy Metals
Descriptors: Heavy metals
Descriptors: Mercury
Descriptors: Methyl mercury
Descriptors: Methylmercury
Descriptors: Nature conservation
Descriptors: Physical properties
Descriptors: Rivers
Descriptors: Sediment Contamination
Descriptors: Sediment chemistry
Descriptors: Sediment pollution
Descriptors: Sediment properties
Descriptors: Soil
Descriptors: Soil Contamination
Descriptors: Wetlands
Descriptors: backwaters
Descriptors: heavy metals
Descriptors: Article Geographic Terms: Hungary
Abstract: Sediment from a representative and ecologically important backwater wetland under the influence of River Tisza (Hungary) was chemically characterized for sediment pollutants. Phosphine production potential, methyl mercury, mercury, and other heavy metals were determined along with other sediment chemical and physical properties. The wetland site, which is relatively isolated, represents an important bird reserve and nature conservation area. Methyl mercury and total mercury content was also low reflecting little mercury pollution in the sediment. Results of heavy metal analysis showed that only copper was elevated with concentration slightly above the reported levels considered excessive in soils and sediments. Other sediment properties were in normal range except boron content, which was high. Results show sediment were relatively unpolluted but should be routinely monitored to insure that this ecologically important area remains environmentally safe for future generation.
Publisher: Taylor & Francis, 11 New Fetter Lane London EC4P 4EE UK, [mailto:info@tandf.co.uk], [URL:http://www.tandf.co.uk]
DOI: 10.1080/10934520701373141
English
Publication Type: Journal Article
Classification: AQ 00003 Monitoring and Analysis of Water and Wastes
Classification: SW 3030 Effects of pollution
Classification: P 2000 FRESHWATER POLLUTION
Classification: Q5 01503 Characteristics, behavior and fate
Classification: Q2 02264 Sediments and sedimentation
Classification: EN 40 Water Pollution: Monitoring, Control & Remediation
Classification: M3 1010 Issues in Sustainable Development

Subfile: Pollution Abstracts; Aqualine Abstracts; ASFA 2: Ocean Technology Policy & Non-Living Resources; Sustainability Science Abstracts; Water Resources Abstracts; ASFA 3: Aquatic Pollution & Environmental Quality Code: FATE.

Dieguez-Acu&Ntilde, A, F. J., and Woods, J. S. (Inhibition of Nf-Kappab-Dna Binding by Mercuric Ion: Utility of the Non-Thiol Reductant, Tris(2-Carboxyethyl)Phosphine Hydrochloride (Tcep), on Detection of Impaired Nf-Kappab-Dna Binding by Thiol-Directed Agents. *Toxicol in vitro. 2000, feb; 14(1):7-16. [Toxicology in vitro : an international journal published in association with bibra]: Toxicol In Vitro*.

Chem Codes: ABSTRACT: Mercuric ion (Hg(2+)), a potent thiol inhibitor, prevents expression of nuclear factor kappaB (NF-kappaB) by mercaptide bond formation with a critical cysteine moiety (cys(62)) on the p50 subunit required for DNA binding. NF-kappaB-DNA binding is typically measured in reaction mixtures in which dithiothreitol (DTT) or other thiol reductants are used to maintain cys(62) in the reduced state. However, the presence of thiol reductants prevents accurate assessment of the Hg(2+) concentration required to prevent NF-kappaB-DNA binding because of competitive mercaptide bond formation. In the present studies we evaluated the efficacy of tris(2-carboxyethyl)phosphine-HCl (TCEP), a non-thiol reducing agent which does not bind Hg(2+), on NF-kappaB-DNA binding in vitro, using recombinant p50 protein and a (32)P-labelled kappaB oligonucleotide. We also measured the minimal Hg(2+) concentration required to prevent this interaction in the presence of either reagent. DTT promoted NF-kappaB-DNA binding in concentrations from 0.25 to 2.6mM in binding reactions. However, in the presence of 0.25mM DTT, inhibition of NF-kappaB binding was seen only at Hg(2+) concentrations greater than 100 microM and results were highly variable. In contrast, TCEP promoted NF-kappaB-DNA binding in a dose-related manner in concentrations from 0.25 to 6mM. In the presence of even 6mM TCEP, Hg(2+) prevented NF-kappaB-DNA binding at concentrations as low as 20 microM in binding reactions. Similar findings were observed with regard to the thiol alkylating agent N-ethylmaleimide (NEM). These findings demonstrate the utility of TCEP as reductant in nuclear binding reaction assays involving the interaction of thiol constituents. They also demonstrate inhibition of NF-kappaB-DNA binding at Hg(2+) concentrations comparable to those known to initiate toxicity and apoptotic cell death in vivo.
MESH HEADINGS: DNA/*drug effects/metabolism
MESH HEADINGS: Dithiothreitol/pharmacology
MESH HEADINGS: Electrophoresis, Polyacrylamide Gel
MESH HEADINGS: Ethylmaleimide/pharmacology
MESH HEADINGS: Humans
MESH HEADINGS: Mercury/*pharmacology
MESH HEADINGS: NF-kappa B/*antagonists &amp
MESH HEADINGS: inhibitors/drug effects/metabolism
MESH HEADINGS: Oligonucleotides/pharmacology
MESH HEADINGS: Phosphines/*pharmacology
MESH HEADINGS: Recombinant Proteins/pharmacology
MESH HEADINGS: Reducing Agents/*pharmacology
MESH HEADINGS: Sulfhydryl Reagents/*pharmacology Code: IN VITRO.

Donahaye, E. J (2000). Current status of non-residual control methods against stored product pests. *Crop Prot.* 19: 571-576.

Chem Codes: A review with 39 refs. There is an increasing dichotomy between the demands of the first world for quality food uncontaminated by insecticidal residues, and the desperate need of third-world populations to maintain and protect their harvested grain from the deprivations of insects, so as to maintain a min. level of food security. Fumigation is widely regarded as a non-residual treatment and fumigation with phosphine will continue for the immediate future as the mainstay against insect infestation. However, to ensure its continued use, insect resistance to phosphine must be countered by more efficient application techniques. Already, available alternative control technologies such as hermetic storage and the use of controlled atmospheres using either nitrogen or carbon dioxide also rely heavily on well-sealed storage structures, that are rarely available in rigid silos, but easily obtainable with flexible plastic liners. Aeration systems to cool grain bulks and thereby prevent insect development, are being widely used even in warm climates but are only applicable for bulk grain. Other non-residual treatments such as mech. impaction, irradn., biol. control or heating, are suitable for high-quality commodities or niche situations. [on SciFinder (R)] CRPTD6 0261-2194 Copyright: Copyright (C) 2010 ACS on SciFinder (R))

Database: CAPLUS
Accession Number: AN 2000:895591
Chemical Abstracts Number: CAN 134:158775
Section Code: 5-0
Section Title: Agrochemical Bioregulators
Document Type: Journal; General Review
Language: written in English.
Index Terms: Insecticides (fumigants; non-residual control methods against stored product pests with); Fumigants (insecticidal; non-residual control methods against stored product pests with); Controlled atmospheres; Fumigants (non-residual control methods against stored product pests with); Insect (stored product-infesting; non-residual control methods against)
CAS Registry Numbers: 7803-51-2 (Phosphine) Role: BUU (Biological use, unclassified), BIOL (Biological study), USES (Uses) (non-residual control methods against stored product pests with)
Citations: Andrews, A; Proceedings of the Sixth International Wkg Conference on Stored-product Protection 1994, 1, 27
Citations: Annis, P; Proceedings of the International Conference on Controlled Atmosphere and Fumigation in Grain Storages 1992 1993, 71
Citations: Annis, P; Suggested recommendations for the fumigation of grain in the ASEAN region Part 2 1991, 58
Citations: Bailey, S; J Stored Prod Res 1965, 1, 25
Citations: Banks, H; Proceedings of the Sixth International Wkg Conference on Stored-product Protection, 1, 2
Citations: Bell, C; The Methyl Bromide Issue Agrochemicals in Plant Protection 1996, 1, 400
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Citations: Cassells, J; Proceedings of the Sixth International Wkg Conference on Stored-product Protection 1994, 1, 56
Citations: Chaudhry, M; Proceedings of the International Conference on Controlled Atmosphere and Fumigation in Stored Products 1997, 45
Citations: Delmenico, R; Proceedings of the International Conference on Controlled Atmosphere and Fumigation in Grain Storages 1992 1993, 3
Citations: Donahaye, E; J Stored-Prod Res 1996, 32, 232
Citations: Fleurat-Lessard, F; Proceedings of the Workshop on Alternatives to Methyl Bromide 1996, 83
Citations: Friendship, C; GASGA Seminar on Fumigation Technology in Developing Countries 1986, 141
Citations: Haines, C; Trop Stored Prod Info 1984, 49, 17
Citations: Holman, L; Marketing Res Rep 1960, 178, 46
Citations: Hukill, W; Agric Eng 1953, 34, 456
Citations: Hyde, M; Proceedings of the Fifth British Insecticides and Fungicides Conference 1969, 412
Citations: Jay, E; GASGA Seminar on Fumigation Technology in Developing Countries 1986, 173
Citations: Jay, E; Proceedings of the International Symposium on Practical Aspects of Controlled Atmosphere and Fumigation in Grain Storages 1983 1984, 3
Citations: Maier, D; Proceedings of the Sixth International Wkg Conference on Stored-product Protection 1994, 1, 300
Citations: Markham, R; Proceedings of the Sixth International Wkg Conference on Stored-product Protection 1994, 1, 1087
Citations: Navarro, S; Proceedings of the seventh International Wkg Conference on Stored-product Protection 1998 1999, 1, 335
Citations: Navarro, S; J Stored Prod Res 1969, 5, 73
Citations: Navarro, S; ACIAR Proceedings No 25 1989 1990, 152
Citations: Anon; The mechanics and physics of modern grain aeration management in press 2000, Cat No 1355
Citations: Noyes, R; Proceedings of the Sixth International Wkg Conference on Stored-product Protection 1994, 1, 335
Citations: Noyes, R; Proceedings of the International Conference on Controlled Atmosphere and Fumigation in Stored Products 1997, 1, 359
Citations: Oxley, T; Proceedings of the third International Bread Congress 1955, 179
Citations: Oxley, T; Ann Appl Biol 1963, 51, 313

Citations: Shedd, C; Agric Eng 1953, 34, 616
Citations: Soderstrom, E; J Stored Prod Res 1992, 28, 235
Citations: Taylor, R; Proceedings of the Sixth International Wkg Conference on Stored-Product Protection 1994, 1, 210
Citations: Tyler, P; Int Pest Control 1983, 25, 10
Citations: UNEP; Montreal Protocol on substances that deplete the ozone layer 1994 1995, 304
Citations: van Graver, S; Suggested recommendations for the fumigation of grain in the ASEAN region: Part 3 1994, 79
Citations: Winks, R; Proceedings of the fourth International Wkg Conference on Stored-product Protection 1986 1987, 335
Citations: Winks, R; Proceedings of the International Conference on Controlled Atmosphere and Fumigation in Grain Storages 1992 1993, 399
Citations: Winks, R; Proceedings of the International Conference on Controlled Atmosphere and Fumigation in Stored Products 1997, 293
Citations: Zettler, J; Proceedings of the International Conference on Controlled Atmosphere and Fumigation in Stored Products 1997, 445 review/ fumigant/ insecticide/ controlled/ atm/ stored/ product/ pest Code: REVIEW.

Drolet, R., Laverty, S., Braselton, W. E., and Lord, N. (1996). Zinc Phosphide Poisoning in a Horse. *Equine Vet. J.* 28: 161-162 .
Chem Codes: Chemical of Concern: ZnP Code: INCIDENT.

Fiedler, L. A. (1988). Rodent Pest Problems and Management in Eastern Africa. *FAO Plant Prot.Bull.* 36: 125-134.
Code: REVIEW.

Fiedler, L. A. (1988). Rodent Pest Problems and Management in Eastern Africa. *FAO Plant Prot.Bull.* 36: 125-134.
Chem Codes: EcoReference No.: 75721
Chemical of Concern: BDF,CPC,NaFA,RSG,Tl,WFN,ZnP Code: REVIEW.

Fields, P. G. and White, N. D. G. (2002). Alternatives to Methyl Bromide Treatments for Stored-Product and Quarantine Insects. *Annual Review of Entomology, 47 (-) pp. 331-359, 2002*.
Chem Codes: Descriptors: Ozone
Descriptors: Flour mills
Descriptors: Warehouses
Descriptors: Phosphine
Descriptors: Heat
Descriptors: Cold
Descriptors: Sulfuryl fluoride
Descriptors: Fumigation
Abstract: Methyl bromide is used to control insects as a space fumigant in flour and feed mills and ship holds, as a product fumigant for some fruit and cereals, and for general quarantine purposes. Methyl bromide acts rapidly, controlling insects in less than 48 h in space fumigations, and it has a wide spectrum of activity, controlling not only insects but also nematodes and plant-pathogenic microbes. This chemical will be banned in 2005 in developed countries, except for exceptional quarantine purposes, because it depletes ozone in the atmosphere. Many alternatives have been tested as replacements for methyl bromide, from physical control methods such as heat, cold, and sanitation to fumigant replacements such as phosphine, sulfuryl fluoride, and carbonyl sulfide, among others. Individual situations will require their own type of pest control techniques, but the most promising include integrated pest management tactics and combinations of treatments such as phosphine, carbon dioxide, and heat.
156 refs.
English
Publication Type: Journal
Publication Type: Review
Country of Publication: United States
Classification: 92.10.4.3 CROP SCIENCE: Crop Protection: Pests
Classification: 92.10.2.1 CROP SCIENCE: Agronomy and Horticulture: Cereals

Classification: 92.10.2.5 CROP SCIENCE: Agronomy and Horticulture: Fruit and nuts
Subfile: Plant Science Code: REVIEW.

Garry, Vincent F., Griffith, Jack, Danzl, Thomas J., Nelson, Richard L., Whorton, Elbert B., Krueger, Lisa A., and Cervenka, Jaroslav (1989). Human genotoxicity: pesticide applicators and phosphine. *Science (Washington, D. C., 1883-)* 246: 251-5.
Chem Codes: Fumigant applicators who, 6 wk to 3 mo earlier, had been exposed to PH3, a common grain fumigant, or to PH3 and other pesticides had significantly increased stable chromosome rearrangements, primarily translocations in G-banded lymphocytes. Less stable aberrations, including chromatid deletions and gaps, were significantly increased only during the application season, but not at this latter time point. During fumigant application, measured exposure to PH3 exceeded accepted national stds. Because PH3 is also used as a dopant in the microchip industry and is generated in waste treatment, the possibility of more widespread exposure and long-term health sequelae must be considered. [on SciFinder (R)] SCIEAS 0036-8075 Copyright: Copyright (C) 2010 ACS on SciFinder (R))
Database: CAPLUS
Accession Number: AN 1990:61955
Chemical Abstracts Number: CAN 112:61955
Section Code: 59-5
Section Title: Air Pollution and Industrial Hygiene
CA Section Cross-References: 4, 5
Document Type: Journal
Language: written in English.
Index Terms: Chromatid (aberrations of, in lymphocytes in occupational exposure to phoshine, in humans); Chromosome (aberrations of, in lymphocytes, occupational exposure to phoshine in relation to, in humans); Air pollution (by phosphine, occupational exposure to, chromosome and chromatid aberrations in lymphocytes of workers in relation to); Lymphocyte (chromosomes and chromatids of, aberrations in, from occupational exposure to phosphine, in humans); Cereal (fumigation of, with phosphine, occupational exposure in, genotoxicity in relation to); Hygiene (industrial, in phosphine application in fumigation, chromosome and chromatid aberrations in lymphocytes of workers in relation to)
CAS Registry Numbers: 7803-51-2 (Phosphine) Role: ADV (Adverse effect, including toxicity), BIOL (Biological study) (occupational exposure to, chromosome and chromatid aberrations in lymphocytes in workers in relation to) phosphine/ occupational/ exposure/ genotoxicity;/ chromosome/ aberration/ occupational/ exposure/ phosphine;/ chromatid/ aberration/ occupational/ exposure/ phosphine;/ health/ hazard/ phosphine/ occupational/ exposure Code: HUMAN HEALTH.

Gassmann, G., Van Beusekom, J. E. E., and Glindemann, D. (1996). Offshore Atmospheric Phosphine. *Naturwissenschaften.* 83, 83: 129-131. 1996., 129-131.
Chem Codes: Descriptors: Article Subject Terms: air pollution
Descriptors: air sampling
Descriptors: air-sea interaction
Descriptors: air-water interactions
Descriptors: atmosphere
Descriptors: atmospheric chemistry
Descriptors: gases
Descriptors: marine environment
Descriptors: ocean-atmosphere system
Descriptors: phosphorus
Descriptors: phosphorus cycle
Descriptors: sea surface
Descriptors: troposphere
Descriptors: volatile compounds
Descriptors: Article Geographic Terms: ANE, Germany, German Bight
Descriptors: ANE, North Sea
Abstract: In the summer of 1995, gaseous phosphine (PH sub(3)) as a potential volatile participant in the atmospheric phosphorus cycle was observed for the first time in the lower troposphere close to the sea surface in the German Bight (North Sea). While the daytime concentration of atmospheric PH sub(3)

remained at a low level of 41 pg m super(-3), the postmidnight concentration peaked at a value of 885 pg m super(-3) (plus or minus 30% rel.s.d.).
Publication Type: Journal Article
Classification: P 0000 AIR POLLUTION
Classification: Q2 02188 Atmospheric chemistry
Classification: Q5 01503 Characteristics, behavior and fate
Subfile: ASFA 3: Aquatic Pollution & Environmental Quality; ASFA 2: Ocean Technology Policy & Non-Living Resources; Pollution Abstracts Code: FATE.

Geissbuhler, H., Brooks, G. T., and Kearney, P. C. (1978). Biochemistry of Pests and Mode of Action of Pesticides, Pesticide Degradation, Pesticide Residues, Formulation Chemistry. *Advances in Pesticide Science, Part 3: Biochemistry of Pests and Mode of Action of Pesticides, Pesticide Degradation, Pesticide Residues, Formulation Chemistry, Permagon Press, NY,* 8 p. (Table of Contents only).
Code: REFS CHECKED/REVIEW/SKIMMED.

Geissbuhler, H., Brooks, G. T., and Kearney, P. C. (1978). Biochemistry of Pests and Mode of Action of Pesticides, Pesticide Degradation, Pesticide Residues, Formulation Chemistry. *Advances in Pesticide Science, Part 3: Biochemistry of Pests and Mode of Action of Pesticides, Pesticide Degradation, Pesticide Residues, Formulation Chemistry, Permagon Press, NY,* 8 p. (Table of Contents only).
Chem Codes: EcoReference No.: 93504
Chemical of Concern: CuS,DDT,FNV,HCCH,LNR,MLT,MOM,MXC,NaBT,PPA,PYT,SMT,TXP,ZnP
Code: REFS CHECKED,REVIEW,SKIMMED.

Gendeh, G. S., Young, L. C., De Medeiros C Lc, Jeyaseelan, K., Harvey, A. L., and Chung, M. Cm (1997). A New Potassium Channel Toxin From the Sea Anemone Heteractis Magnifica: Isolation, Cdna Cloning, and Functional Expression. *Biochemistry* 36: 11461-11471.
Chem Codes: ABSTRACT: BIOSIS COPYRIGHT: BIOL ABS. A new potassium channel toxin, HmK, has been isolated from the sea anemone Heteractis magnifica. It inhibits the binding of (125I)-alpha-dendrotoxin (a ligand for voltage-gated K channels) to rat brain synaptosomal membranes with a Ki of about 1 nM, blocks K+ currents through Kv 1.2 channels expressed in a mammalian cell line, and facilitates acetylcholine release at the avian neuromuscular junction. HmK comprises of 35 amino acids (Mr 4055) with the sequence R1TCKDLIPVS10ECTDIRCRTS20MKYRLNLCRK30TCGSC35. A full assignment of the disulfide linkages was made by using partial reduction with tri(2-carboxyethyl)phosphine (TCEP) at acid pH and rapid alkylation with iodoacetamide. The disulfide bridges were identified as Cys3-Cys35, Cys12-Cys28, and Cys17-Cys32. A cDNA clone encoding HmK was isolated using RT-PCR from the total RNA obtained from sea anemone tentacles, while the 5'- and 3'-flanking regions of the cDNA were amplified by RACE. The full-length cDNA was 563 bp lon
MESH HEADINGS: ANIMALS
MESH HEADINGS: CYTOLOGY
MESH HEADINGS: HISTOCYTOCHEMISTRY
MESH HEADINGS: AMINO ACIDS/ANALYSIS
MESH HEADINGS: PEPTIDES/ANALYSIS
MESH HEADINGS: PROTEINS/ANALYSIS
MESH HEADINGS: AMINO ACIDS
MESH HEADINGS: PEPTIDES
MESH HEADINGS: PROTEINS
MESH HEADINGS: DNA REPLICATION
MESH HEADINGS: TRANSCRIPTION, GENETIC
MESH HEADINGS: TRANSLATION, GENETIC
MESH HEADINGS: BIOPHYSICS
MESH HEADINGS: MACROMOLECULAR SYSTEMS
MESH HEADINGS: MOLECULAR BIOLOGY
MESH HEADINGS: ENZYMES/ANALYSIS
MESH HEADINGS: AMINO ACIDS/METABOLISM
MESH HEADINGS: PEPTIDES/METABOLISM
MESH HEADINGS: PROTEINS/METABOLISM

MESH HEADINGS: DIAGNOSIS
MESH HEADINGS: NERVOUS SYSTEM
MESH HEADINGS: POISONING
MESH HEADINGS: ANIMALS, LABORATORY
MESH HEADINGS: ANATOMY, COMPARATIVE
MESH HEADINGS: ANIMAL
MESH HEADINGS: CNIDARIA/PHYSIOLOGY
MESH HEADINGS: PHYSIOLOGY, COMPARATIVE
MESH HEADINGS: PATHOLOGY
MESH HEADINGS: ENTEROBACTERIACEAE
MESH HEADINGS: INVERTEBRATES
MESH HEADINGS: BIRDS
MESH HEADINGS: MURIDAE
KEYWORDS: Cytology and Cytochemistry-Animal
KEYWORDS: Biochemical Methods-Proteins
KEYWORDS: Biochemical Studies-Proteins
KEYWORDS: Replication
KEYWORDS: Biophysics-Molecular Properties and Macromolecules
KEYWORDS: Enzymes-Methods
KEYWORDS: Metabolism-Proteins
KEYWORDS: Nervous System-General
KEYWORDS: Toxicology-General
KEYWORDS: Invertebrata
KEYWORDS: Enterobacteriaceae (1992-)
KEYWORDS: Cnidaria
KEYWORDS: Galliformes
KEYWORDS: Muridae Code: BIOLOGICAL TOXICANT.

Geng, Jin-ju, Wang, Qiang, Niu, Xiao-jun, and Wang, Xiao-rong (2005). Formation and release of phosphine in lake sediments under simulative environmental conditions. *Nongye Huanjing Kexue Xuebao* 24: 517-520.
Chem Codes : Phosphine is a natural gaseous carrier of phosphorus in its biogeochem. cycles, and it might be of importance to the phosphorus balance of eutrophic lakes. A lab. study was conducted to det. the effects of various environmental factors on the formation and release of matrix bound phosphine from lake sediments taken from eutrophic Wulongtan Lake in Nanjing city and Taihu Lake of China. Environmental factors included the ratio of water to sediment, disturbance, Fe(II, III) and Mn(II). When the ratio of water to sediment (wt./wt.) was 3:1, both matrix bound phosphine and gaseous phosphine achieved their peak values, with 7,517 ng.kg-1 and 40 ng.m-1, resp. The magnitude order of phosphine in sediments or headspace was similar resp. at other ratios of water to sediment. Disturbance also influenced the behavior of phosphine in lake sediment. Under lower disturbing intensity of 50 rpm the change of matrix bound phosphine concn. was not detected. As the disturbing intensity increased to 100 rpm, there was a progressive and rapid increase at the first 48 h, reaching a max. concn. 7,932 ng.kg-1, then declined gradually subsequently. When the disturbing intensity was 150 rpm, a rapid release process of phosphine was obsd. and approx. 99.6% phosphine disappeared within 120 h, with the disappearing rate of matrix bound phosphine being 43 ng.kg-1.h-1. Matrix hound phosphine concns. in lake sediments were detd. by the balance of natural generation and depletion process. The removal rate of matrix bound phosphine could be accelerated when Fe (III) was added, with 45.6% matrix bound phosphine disappearing in the over 120 h expts. when 3 g MnCl2.4H2O was added to 30 g sediments. Fe (II) and Mn (II) had no significant effect on the elimination rate of the matrix bound phosphine. [on SciFinder (R)] NHKXA7 1672-2043 Copyright: Copyright (C) 2010 ACS on SciFinder (R))
Database: CAPLUS
Accession Number: AN 2005:797479
Chemical Abstracts Number: CAN 144:238848
Section Code: 61-2
Section Title: Water
Document Type: Journal
Language: written in Chinese.

Index Terms: Lakes (eutrophic; formation and release of phosphine in lake sediments under simulative environmental conditions); Lake sediments (formation and release of phosphine in lake sediments under simulative environmental conditions)
CAS Registry Numbers: 7803-51-2 (Phosphine) Role: BSU (Biological study, unclassified), FMU (Formation, unclassified), POL (Pollutant), BIOL (Biological study), FORM (Formation, nonpreparative), OCCU (Occurrence) (formation and release of phosphine in lake sediments under simulative environmental conditions); 15438-31-0; 16397-91-4 (Manganese2+); 20074-52-6 Role: MOA (Modifier or additive use), OCU (Occurrence, unclassified), OCCU (Occurrence), USES (Uses) (formation and release of phosphine in lake sediments under simulative environmental conditions) formation/ release/ phosphine/ lake/ sediment/ modeling/ simulation/ eutrophic/ environment Code: FATE.

Geng Jinju, Niu Xiaojun, Wang Xiaorong, Edwards Marc, and Glindemann Dietmar (2010). The Presence of Trace Phosphine in Lake Taihu Water. *International Journal of Environmental and Analytical Chemistry [Int. J. Environ. Anal. Chem.]*. 90, 90: 737-746. Aug 2010., 737-746.
Chem Codes: Descriptors: Article Subject Terms: Biogeochemical cycles
Descriptors: Biogeochemistry
Descriptors: Emissions
Descriptors: Equilibrium
Descriptors: Henry's law
Descriptors: Interfaces
Descriptors: Lakes
Descriptors: Oxidation
Descriptors: Phosphates
Descriptors: Phosphorus
Descriptors: Speciation
Descriptors: Warm seasons
Descriptors: Water Analysis
Descriptors: Water Sampling
Descriptors: Water sampling
Descriptors: chemical cycles
Descriptors: water column
Descriptors: Article Geographic Terms: China, People's Rep.
Descriptors: China, People's Rep., Tai Hu L.
Abstract: Phosphine (PH3) is a natural constituent in phosphorus (P) chemical cycles. The discovery of phosphine will shed new light on the mechanisms of P supplement and biogeochemical cycles. Since phosphine is converted to phosphate after complex oxidation via hypophosphite and phosphite, if it were present in the water column, understanding its production and emission could enhance our understanding of P speciation. Assuming that phosphine in the gas phase is an ideal gas and at equilibrium between water and gas interface, phosphine in water solution can be quantified from the equilibrated concentration in gas phase using the Henry's Law. Application of this approach to Lake Taihu, China, phosphine in unfiltered and filtered water samples (0.45 mu m) was analysed. Results showed that phosphine was universally present in Lake Taihu water. Phosphine concentration in unfiltered water ranged from 0.16 to 1.11 pg L-1, and was much less (0.01 to 0.04 pg L-1) in filtered samples. Over 90% of phosphine was adsorbed onto or incorporated into suspended materials with <10% dissolved in the water. Higher phosphine concentrations could be observed in warm seasons. Positive relationships were found between PH3 and TP (average R2 = 0.59 plus or minus 0.22) and TSP (average R2 = 0.37 plus or minus 0.13).
Publisher: Taylor & Francis Group Ltd., 2 Park Square Oxford OX14 4RN United Kingdom
DOI: 10.1080/03067310903013230
English
Publication Type: Journal Article
Classification: M2 556.5 Surface Water Hydrology (556.5)
Classification: P 2000 FRESHWATER POLLUTION
Classification: SW 4050 Water law and institutions
Subfile: Pollution Abstracts; Environment Abstracts; Meteorological & Geoastrophysical Abstracts; Water Resources Abstracts; ASFA 3: Aquatic Pollution & Environmental Quality; ASFA 2: Ocean Technology Policy & Non-Living Resources Code: FATE.

Goel, A. and Aggarwal, P. (Pesticide Poisoning. *Natl med j india. 2007 jul-aug; 20(4):182-91. [The national medical journal of india]: Natl Med J India*.
Chem Codes: ABSTRACT: Acute poisoning with pesticides is a global public health problem and accounts for as many as 300,000 deaths worldwide every year. The majority of deaths occur due to exposure to organophosphates, organochlorines and aluminium phosphide. Organophosphate compounds inhibit acetylcholinesterase resulting in acute toxicity. Intermediate syndrome can develop in a number of patients and may lead to respiratory paralysis and death. Management consists of proper oxygenation, atropine in escalating doses and pralidoxime in high doses. It is Important to decontaminate the skin while taking precautions to avoid secondary contamination of health personnel. Organochlorine pesticides are toxic to the central nervous system and sensitize the myocardium to catecholamines. Treatment involves supportive care and avoiding exogenous sympathomimetic agents. Ingestion of paraquat causes severe inflammation of the throat, corrosive injury to the gastrointestinal tract, renal tubular necrosis, hepatic necrosis and pulmonary fibrosis. Administration of oxygen should be avoided as it produces more fibrosis. Use of immunosuppressive agents have improved outcome in patients with paraquat poisoning. Rodenticides include thallium, superwarfarins, barium carbonate and phosphides (aluminium and zinc phosphide). Alopecia is an atypical feature of thallium toxicity. Most exposures to superwarfarins are harmless but prolonged bleeding may occur. Barium carbonate Ingestion can cause severe hypokalaemia and respiratory muscle paralysis. Aluminium phosphide is a highly toxic agent with mortality ranging from 37% to 100%. It inhibits mitochondrial cytochrome c oxidase and leads to pulmonary and cardiac toxicity. Treatment is supportive with some studies suggesting a beneficial effect of magnesium sulphate. Pyrethroids and insect repellants (e.g. diethyltoluamide) are relatively harmless but can cause toxic effects to pulmonary and central nervous systems. Ethylene dibromide-a highly toxic, fumigant pesticide-produces oral ulcerations, followed by liver and renal toxicity, and is almost uniformly fatal. Physicians working in remote and rural areas need to be educated about early diagnosis and proper management using supportive care and antidotes, wherever available.
MESH HEADINGS: Acute Disease
MESH HEADINGS: Carbamates/*poisoning/toxicity
MESH HEADINGS: Herbicides/poisoning/toxicity
MESH HEADINGS: Humans
MESH HEADINGS: Immunosuppressive Agents/therapeutic use
MESH HEADINGS: Magnesium Sulfate/therapeutic use
MESH HEADINGS: Organophosphorus Compounds/*poisoning/toxicity
MESH HEADINGS: Pesticides/*poisoning/toxicity
MESH HEADINGS: Risk Factors Code: HUMAN HEALTH.

Goodall, M. J., Volz, S. A., Johnston, J. J., Hurlbut, D. B., Mauldin, R. E., Griffin, D. L., and Petty, E. E. (Determination of Zinc Phosphide Residues in Corn (Zea Mays) Grain, Fodder, and Forage. *Bull environ contam toxicol. 1998, jun; 60(6):877-84. [Bulletin of environmental contamination and toxicology]: Bull Environ Contam Toxicol*.
Chem Codes: MESH HEADINGS: Animal Feed/*analysis
MESH HEADINGS: Food Contamination/*analysis
MESH HEADINGS: Pesticide Residues/*analysis
MESH HEADINGS: Phosphines/*analysis
MESH HEADINGS: Quality Control
MESH HEADINGS: Rodenticides/*analysis
MESH HEADINGS: Zea mays/*chemistry
MESH HEADINGS: Zinc Compounds/*analysis Code: FOOD.

Guale, F. G., Stair, E. L., Johnson, B. W., Edwards, W. C., and Haliburton, J. C. (1994). Laboratory Diagnosis of Zinc Phosphide Poisoning. *Vet. Hum. Toxicol.* 36: 517-518.
Chem Codes: EcoReference No.: 86617
Chemical of Concern: ZnP Code: METHODS.

Heck, S. D., Kelbaugh, P. R., Kelly, M. E., Thadeio, P. F., Saccomano, N. A., Stroh, J. G., and Volkmann, R. A. (1994). Disulfide Bond Assignment of Omega -Agatoxins Ivb and Ivc: Discovery of a D-Serine Residue in Omega -Agatoxin Ivb. *Journal of the American Chemical Society [J. AM. CHEM. SOC.]*. 116, 10426-

10436. Nov 1994.
Chem Codes: Descriptors: Article Subject Terms: amino acid sequence
Descriptors: calcium antagonists
Descriptors: disulfide bonds
Abstract: A TCEP (tris(2-carboxyethyl)phosphine)-based reduction/cysteine amidoalkylation strategy was utilized to solve the disulfide structures of omega -agatoxins IVB (1) and IVC (2). These p-type calcium channel antagonists, isolated from the American funnel-web spider Agelenopsis aperta, were found to have the same amino acid sequence and disulfide bond motif. The difference between omega -Aga IVB (1) and IVC (2) resides in the C-termini (Ser sub(46)) of both peptides. omega -Aga IVB (1) contains a D-serine residue while omega -Aga IVC (2) has an L-serine in this position. The existence of D-amino acids in eucaryotic systems is extremely rare. To our knowledge, however, this is the first time that a peptide sequence with an established cystine pattern possesses an amino acid in both D and L configurations (DBO).
English
Publication Type: Journal Article
Classification: X 24173 Animals
Subfile: Toxicology Abstracts Code: NO TOXICANT.

Heinz, G. H., Hill, E. F., Stickel, W. H., and Stickel, L. F. (1979). Environmental Contaminant Studies by the Patuxent Wildlife Research Center. *In: Kenaga,E.E.(Ed.), Avian and Mammalian Wildlife Toxicology, ASTM STP 693, Philadelphia, PA* 9-35.
Code: REFS CHECKED/REVIEW.

Jacob, J. and Leukers, A. (2008). Preference of Birds for Zinc Phosphide Bait Formulations. *Pest Manag. Sci.* 64: 74-80.
Chem Codes: Chemical of Concern: ZnP Code: NO TOXICANT.

Jinju Geng, Qiang Wang, Xiaojun, N. i. u., and Xiaorong Wang (2007). Effects of Environmental Factors on the Production and Release of Matrix-Bound Phosphine From Lake Sediments. *Frontiers of Environmental Science & Engineering in China [Front. Environ. Sci. Eng. China]*. 1, 1: 120-124. Feb 2007., 120-124.
Chem Codes: Descriptors: Article Subject Terms: Abiotic factors
Descriptors: Bases
Descriptors: Depletion
Descriptors: Environmental factors
Descriptors: Eutrophic lakes
Descriptors: Hydrogen Ion Concentration
Descriptors: Laboratories
Descriptors: Laboratory testing
Descriptors: Lake Sediments
Descriptors: Lake deposits
Descriptors: Lakes
Descriptors: Oxygen
Descriptors: Sediment chemistry
Descriptors: Sediments
Descriptors: Temperature
Descriptors: Temperature effects
Descriptors: Testing Procedures
Descriptors: Tests
Descriptors: environmental factors
Descriptors: eutrophic lakes
Descriptors: pH
Descriptors: pH effects
Abstract: Effects of pH, temperature, and oxygen on the production and release of phosphine in eutrophic lake sediments were investigated under laboratory tests. Results indicated that the elimination of matrix-bound phosphine was accelerated under initial pH 1 or 12. Phosphine levels could reach maximum under initial pH 10. The contents of phosphine increased with the addition of alkali under pH 4--12. The rates of

phosphine production and release from lake sediments varied with temperature. 20DGC was the most favorable temperature for the production of matrix-bound phosphine. Oxygen showed little effect on matrix-bound phosphine. Matrix-bound phosphine concentrations in lake sediments were concluded to be dependent on a balance of natural generation and depletion processes.
Publisher: Gaodeng Jiaoyu Chubanshe (Higher Education Press), 4 Dewai Dajie Beijing 100011 China
DOI: 10.1007/s11783-007-0022-4
English
Publication Type: Journal Article
Environmental Regime: Freshwater
Classification: Q5 01503 Characteristics, behavior and fate
Classification: Q2 02264 Sediments and sedimentation
Classification: P 2000 FRESHWATER POLLUTION
Classification: SW 6010 Structures
Classification: ENA 08 International
Classification: EN 10 General Environmental Engineering
Subfile: ASFA 2: Ocean Technology Policy & Non-Living Resources; Pollution Abstracts; ASFA 3: Aquatic Pollution & Environmental Quality; Water Resources Abstracts; Environment Abstracts Code: FATE.

Kligerman, A. D., Bishop, J. B., Erexson, G. L., Price, H. C., O'Connor, R. W., Morgan, D. L., and Zeiger, E (1994). Cytogenetic and germ cell effects of phosphine inhalation by rodents: II. Subacute exposures to rats and mice. *Environ. Mol. Mutagen.* 24: 301-6.
Chem Codes: To det. the in vivo cytogenetic effects of inhalation of PH3, male F344/N rats and B6C3F1 mice were exposed to target concns. of 0, 1.25, 2.5, or 5 ppm PH3 for 6 h/day for 9 days over an 11-day period. Approx. 20 h after the termination of exposures, blood was removed from the mice and rats by cardiac puncture and the lymphocytes cultured for analyses of sister chromatid exchanges and chromosome aberrations in rats and mice, and micronuclei (MN) in cytochalasin B-induced binucleated lymphocytes from mice. In addn., bone marrow (rats) and peripheral blood (mice) smears were made for the anal. of MN in polychromatic and normochromatic erythrocytes. No significant increase in any of the cytogenetic endpoints was found at any of the concns. examd. Thus, concns. of PH3 up to 5 ppm are not genotoxic to rodents when administered by inhalation for 9 days during an 11-day period as measured by several cytogenetic assays. To evaluate the effects of PH3 on male germ cells, a dominant lethal test was conducted in male mice exposed to 5 ppm PH3 for 10 days over a 12-day period and mated to groups of untreated females (2 females/male) on each of 6 consecutive 4-day mating intervals. None of the 6 groups of females exhibited a significant increase in percent resorptions. Thus, exposure to 5 ppm PH3 by inhalation does not induce dominant lethality in male mouse germ cells at steps in spermatogenesis ranging from late differentiating spermatogonia/early primary spermatocytes through mature sperm. [on SciFinder (R)] EMMUEG 0893-6692 Copyright: Copyright (C) 2010 ACS on SciFinder (R))
Database: CAPLUS
Accession Number: AN 1995:349352
Chemical Abstracts Number: CAN 122:153903
Section Code: 4-6
Section Title: Toxicology
Document Type: Journal
Language: written in English.
Index Terms: Chromosome; Mutagens; Rodent (cytogenetic and germ cell effects of phosphine inhalation by rodents); Mutation (lethal, dominant, cytogenetic and germ cell effects of phosphine inhalation by rodents); Cell nucleus (micro-, cytogenetic and germ cell effects of phosphine inhalation by rodents); Recombination (sister chromatid exchange, cytogenetic and germ cell effects of phosphine inhalation by rodents)
CAS Registry Numbers: 7803-51-2 (Phosphine) Role: ADV (Adverse effect, including toxicity), BIOL (Biological study) (cytogenetic and germ cell effects of phosphine inhalation by rodents) genotoxicity/ phosphine Code: INHALE.

Kligerman, A. D., Bryant, M. F., Doerr, C. L., Erexson, G. L., Kwanyuen, P., and McGee, J. K (1994). Cytogenetic effects of phosphine inhalation by rodents. I: acute 6-hour exposure of mice. *Environ. Mol. Mutagen.* 23:

186-9.
Chem Codes: To det. the in vivo cytogenetic effects of inhalation of PH3, male CD-1 mice were exposed to either 0, 5, 10, or 15 ppm target concns. of PH3 for 6 h. Twenty hours after the termination of exposure, the spleens of the mice were removed, macerated, and the splenocytes cultured for analyses of sister chromatid exchanges, chromosome aberrations, and micronuclei in cytochalasin B-induced binucleated cells. In addn., bone marrow smears were made for the anal. of micronuclei in polychromatic erythrocytes. No increase in any of the cytogenetic endpoints was found at any of the concns. examd. The only statistically significant response was a concn.-related slowing of the cell cycle in the splenocytes. [on SciFinder (R)] EMMUEG 0893-6692 Copyright: Copyright (C) 2010 ACS on SciFinder (R))
Database: CAPLUS
Accession Number: AN 1994:317635
Chemical Abstracts Number: CAN 120:317635
Section Code: 4-6
Section Title: Toxicology
Document Type: Journal
Language: written in English.
Index Terms: Chromosome (aberrations, phosphine in relation to, in splenocyte); Cell cycle (phosphine effect on, in splenocyte); Cell nucleus (micro-, phosphine in relation to, in splenocyte); Erythrocyte (polychromatic, phosphine-induced micronuclei in); Recombination (sister chromatid exchange, phosphine in relation to, in splenocyte); Spleen (splenocyte, phosphine genotoxicity in)
CAS Registry Numbers: 7803-51-2 (Phosphine) Role: ADV (Adverse effect, including toxicity), BIOL (Biological study) (genotoxicity of) phosphine/ genotoxicity Code: INHALE.

Knight, Michael W. (2006). Zinc Phosphide. 1101-1118.
Chem Codes: Keywords: Phosphide
Keywords: zinc
Keywords: Zinc phosphide
ISSN/ISBN: 978-0-72-160639-2 Code: REVIEW.

Krishnakumar, P., Geeta, M. G., and Gopalan, A. V. (Deliberate Self-Poisoning in Children. *Indian pediatr. 2005, jun; 42(6):582-6. [Indian pediatrics]: Indian Pediatr.*
Chem Codes: ABSTRACT: This prospective study was aimed to analyze the nature of and the factors associated with deliberate self-poisoning in children below the age of 12 years. Children referred to the Child Guidance Clinic for evaluation after recovery from the effects of poisoning during the five-year period between 1999 and 2003 formed the subjects of the study. The children were evaluated for stress factors, psychiatric disorders and the nature and mode of deliberate self-poisoning. Deliberate self-poisoning constituted 0.9% of total admissions due to poisoning. There were 10 boys and 2 girls between the ages of 9 and 12 years. Both acute and chronic stress in the family and school were associated with deliberate self-poisoning. Majority of them had psychiatric disorders. Rat poison (zinc phosphide) was the commonest poison used. Two children got the idea from watching TV serials.
MESH HEADINGS: Child
MESH HEADINGS: Family/psychology
MESH HEADINGS: Female
MESH HEADINGS: Humans
MESH HEADINGS: Male
MESH HEADINGS: Poisoning/*epidemiology
MESH HEADINGS: Self-Injurious Behavior/*epidemiology
MESH HEADINGS: Stress, Psychological/epidemiology Code: HUMAN HEALTH.

Kumar, S. (1992). For Control of Bamboo Rats in Rubber Plantation in Tripura. *Indian For.* 118: 869-870.
Code: NO TOX DATA.

Kumar, S. (1992). For Control of Bamboo Rats in Rubber Plantation in Tripura. *Indian For.* 118: 869-870.
Chem Codes: Chemical of Concern: BDF,ZnP Code: NO TOX DATA.

Lam, W. W., Toia, R. F., and Casida, J. E. (1991). Oxidatively Initiated Phosphorylation Reactions of Phosphine. *J.*

Agric. Food Chem. 39: 2274-2278.
Chem Codes: Chemical of Concern: PPHN,ZnP Code: METABOLISM.

Me(acute)chin, V., Consoli, L., Le Guilloux, M., and Damerval, C. (2003). An Efficient Solubilization Buffer for Plant Proteins Focused in Immobilized Ph Gradients. *Proteomics, 3 (7) pp. 1299-1302, 2003*.
Chem Codes: Descriptors: Immobilized pH gradients
Descriptors: Protein solubilization
Descriptors: Two-dimensional gel electrophoresis
Abstract: The solubilization of a large array of proteins before electrophoresis itself is a very critical point for proteomic analyses. We compared the efficiency of several different solubilization buffers. From this work, we defined a very efficient solubilization buffer, including two chaotropes, two reducing agents (R2), two detergents (D2), and two kinds of carrier ampholytes in combination. This so-called R2D2 buffer (5 M urea, 2 M thiourea, 2% 3-[(3-cholamidopropyl) dimethyl-ammonio]-1-propane-sulfonate, 2% N-decyl-N,N-dimethyl-3-ammonio-1-propane-sulfonate, 20 mM dithiothreitol, 5 mM Tris(2-carboxyethyl) phosphine, 0.5% carrier ampholytes 4-6.5, 0.25% carrier ampholytes 3-10) proved to be very efficient for a large range of different samples and allowed us to obtain two-dimensional gels of high resolution and quality.
29 refs.
English
Publication Type: Journal
Publication Type: Conference Paper
Country of Publication: Germany
Classification: 92.1.1.6 BIOCHEMISTRY: Molecular Biology: Proteins
Subfile: Plant Science Code: METHODS.

Mehrpour, O., Keyler, D., and Shadnia, S. (Comment on Aluminum and Zinc Phosphide Poisoning. *Clin toxicol (phila). 2009, sep; 47(8):838-9; author reply 839. [Clinical toxicology (philadelphia, pa.)]: Clin Toxicol (Phila).*
Chem Codes: COMMENTS: Comment on: Clin Toxicol (Phila). 2009 Feb;47(2):89-100 (medline /19280425)
MESH HEADINGS: Aluminum Compounds/*poisoning
MESH HEADINGS: Humans
MESH HEADINGS: Hyperglycemia/chemically induced/metabolism
MESH HEADINGS: Pancreas/drug effects/metabolism
MESH HEADINGS: Pesticides/*poisoning
MESH HEADINGS: Phosphines/*poisoning
MESH HEADINGS: Risk Assessment
MESH HEADINGS: Rodenticides/*poisoning
MESH HEADINGS: Zinc Compounds/*poisoning Code: HUMAN HEALTH.

Mittal, V. P. and Vyas, H. J. (1992). Groundnut. *In: I.Prakash and P.K.Ghosh (Eds.), Rodents in Indian Agriculture, Volume 1, State of the Art, Sci.Publ., Jodhpur, India* 249-264.
Code: REVIEW.

Mittal, V. P. and Vyas, H. J. (1992). Groundnut. *In: I.Prakash and P.K.Ghosh (Eds.), Rodents in Indian Agriculture, Volume 1, State of the Art, Sci.Publ., Jodhpur, India* 249-264.
Chem Codes: EcoReference No.: 75524
Chemical of Concern: BDL,CLC,ZnP Code: REVIEW.

Moseby, K. E., De Jong, S., Munro, N., and Pieck, A. (2005). Home Range, Activity and Habitat Use of European Rabbits (Oryctolagus Cuniculus) in Arid Australia: Implications for Control. *Wildlife Research [Wildl. Res.]*. 32, 305-311. 2005.
Chem Codes: Descriptors: Article Subject Terms: Baiting
Descriptors: Dunes
Descriptors: Feeding behavior
Descriptors: Fumigation

Descriptors: Habitat utilization
Descriptors: Home range
Descriptors: Surface activity
Descriptors: Wildlife management
Descriptors: Article Taxonomic Terms: Oryctolagus cuniculus
Descriptors: Article Geographic Terms: Australia
Abstract: The home range, activity and habitat use of wild European rabbits in northern South Australia were compared during winter and summer, and results used to suggest improvements to control techniques. Average home range was significantly smaller in summer (2.1 ha) than winter (4.2 ha) and there was no significant difference between the sexes. Rabbits used both dune and swale habitat but most warrens and more surface fixes were recorded in dune habitat in both seasons. Proportionally more surface fixes were found in swale habitat at night than during the day. The proportion of diurnal fixes on the surface was not significantly influenced by season, averaging 47% in winter and 62% in summer. Only 30% of radio-collared rabbits flushed by humans retreated to warrens. Comparable levels of diurnal surface activity in both winter and summer suggest that the death rate from fumigation or warren destruction may be similar in both seasons. High levels of diurnal surface activity suggest that warren fumigation may be ineffective unless rabbits can first be flushed to their warrens. The use of dogs to flush rabbits before fumigation or ripping should increase the efficacy of control. Activity data suggest that fumigation or ripping should be conducted between 0900 and 1600 hours in winter and 1100 and 1800 hours in summer when radio-collared rabbits were most likely to be down their warrens. Home-range data suggest that the effectiveness of poison baiting may be increased by placing bait lines closer together in summer and, although bait lines should be concentrated in dune habitat, some poison should also be placed in swale feeding areas remote from warrens. The most successful control method for radio-collared rabbits was fumigation with phosphine gas tablets, with 10 of 11 rabbits successfully killed. Pressure fumigation with chloropicrin was also successful but 1080 poisoning and warren destruction using shovels were all relatively unsuccessful.
DOI: 10.1071/WR04013
English
Publication Type: Journal Article
Classification: D 04700 Management
Subfile: Ecology Abstracts <u>Code</u>: HUMAN HEALTH.

Mourier, H. and Poulsen, K. P. (2000). Control of Insects and Mites in Grain Using a High Temperature /Short Time (Htst) Technique. *Journal of Stored Products Research, 36 (3) pp. 309-318, 2000.*
<u>Chem Codes</u>: Descriptors: HTST treatment
Descriptors: Grain insects
Descriptors: Grain mites
Abstract: Wheat infested with grain mites (Acari) and Sitophilus granarius, and maize infested with Prostephanus truncatus, were exposed to hot air in a CIMBRIA HTST Microline toaster registered trade mark sign . Inlet temperatures of the hot air were in the range of 150-750 degree C decreasing to outlet temperatures in the range of 100 300 degree C during the exposure period. A rotating drum, connected to a natural-gas burner was fed with grain which was in constant movement along the drum and thereby mixed thoroughly during the process. The capacity of the toaster was 1000 kg per hour. Complete control of grain mites and adult S. granarius in wheat was obtained with an inlet temperature of 300-350 degree C and an average residence time in the drum of 6 s. More than 99% mortality was obtained for all stages of S. granarius with an inlet temperature of 300-350 degree C and an average exposure period of 40 s. For control of P. truncatus in maize, an inlet temperature of 700 degree C resulted in a complete disinfestation when the exposure time was 19 s. The reduction in grain moisture content was 0.5-1% at treatments giving 100% control. Germination tests indicate that it is possible to choose a combination of inlet temperatures and exposure periods which effectively kills mites and insects in small grains, without harming the functional properties of the grain. Economy of the method was considered to be competitive with fumigation using phosphine. (C) 2000 Elsevier Science Ltd.
15 refs.
English
Publication Type: Journal
Publication Type: Article
Country of Publication: United Kingdom

Classification: 92.10.4.3 CROP SCIENCE: Crop Protection: Pests
Subfile: Plant Science Code: NO TOXICANT.

Mustaffa-Babjee, A., Hua, L. C., and Nazarddin, M. S. (1970). Sodium Chlorate (Naclo3) Poisoning in Cattle. *Malays.Agric.J.* 47: 309-312.
Code: INCIDENT/SURVEY.

Mustaffa-Babjee, A., Hua, L. C., and Nazarddin, M. S. (1970). Sodium Chlorate (NaClo3) Poisoning in Cattle. *Malays. Agric. J.* 47: 309-312.
Chem Codes: Chemical of Concern: NaClO,ZnP Code: INCIDENT,SURVEY.

Mwanjabe, P. S., Sirima, F. B., and Lusingu, J. (2002). Crop Losses due to Outbreaks of Mastomys natalensis (Smith, 1834) Muridae, Rodentia, in the Lindi Region of Tanzania. *Int. Biodeterior. Biodegrad.* 49: 133-137.
Chem Codes: Chemical of Concern: ZnP Code: NO DURATION,SURVEY.

Neelanarayanan, P., Kanakasabai, R., and Sivaprakasam, C. (1993). Impacts of Zinc Phosphide on the Haematology of the Soft Furred Field Rat, Millardia meltada (Gray). *Comp. Physiol. Ecol.* 18: 144-148.
Chem Codes: Chemical of Concern: ZnP Code: NO DURATION.

Nishiuchi, Y. (1985). Toxicity of Pesticides to Some Aquatic Animals. Vii. Acute Toxicity to Daphnia Magna. *Ecol.Chem.(Seitai Kagaku)* 8: 15-20 (JPN) (ENG ABS).
Code: NON-ENGLISH.

Noack, S. and Reichmuth, C. (1981). Determination of Limits for Injuring Animals and Plants by Phosphine or Methyl Bromide. I. Studies on Drosophila Melanogaster . *ANZ. SCHADLINGSKD. PFLANZ.-UMWELTSCHUTZ.* 54, 23-27. 1981.
Chem Codes: Original Title: Bestimmung von Schwellenwerten fuer die Schaedigung von Tierischen und Pflanzlichen Organismen Durch Phosphorwasserstoff und Methylbromid. 1. Untersuchungen an Drosophila melanogaster
Descriptors: Article Subject Terms: toxicity
Descriptors: Article Taxonomic Terms: Drosophila melanogaster
Abstract: The dependence of the mortality of D. melanogaster on the duration of fumigation was determined at different concentrations of phosphine or methyl bromide as well as in pure air as a control group. For graphic determination of threshold values the rates of mortality are transformed into probits. The threshold values determined for D. melanogaster are compared with phosphine or methyl bromide concentrations that are harmful to men and animal.
German; English
Publication Type: Journal Article
Classification: Z 05182 Pathology
Classification: X 24151 Acute exposure
Subfile: Toxicology Abstracts; Entomology Abstracts Code: NON-ENGLISH.

Patel, R. K., Dubey, O. P., and Awasthi, A. K. (1992). Soybean. *In: I.Prakash and P.K.Ghosh (Eds.), Rodents in Indian Agriculture, Volume 1, State of the Art, Sci.Publ., Jodhpur, India* 265-267.
Code: REFS CHECKED/REVIEW.

Patel, R. K., Dubey, O. P., and Awasthi, A. K. (1992). Soybean. *In: I.Prakash and P.K.Ghosh (Eds.), Rodents in Indian Agriculture, Volume 1, State of the Art, Sci.Publ., Jodhpur, India* 265-267.
Chem Codes: Chemical of Concern: ZnP Code: REFS CHECKED,REVIEW.

Patteson Kemberly G, Trivedi Neel, and Stadtman Thressa C (2005). Methanococcus Vannielii Selenium-Binding Protein (Sebp): Chemical Reactivity of Recombinant Sebp Produced in Escherichia Coli. *Proceedings of the National Academy of Sciences, USA [Proc. Natl. Acad. Sci. USA].* 102, 12029-12034. Aug 2005.
Chem Codes: Descriptors: Article Subject Terms: Alkylation

Descriptors: Anoxic conditions
Descriptors: Chemical modification
Descriptors: Coenzymes
Descriptors: Cysteine
Descriptors: Gels
Descriptors: Glutathione
Descriptors: Metabolites
Descriptors: Protein structure
Descriptors: Proteins
Descriptors: Recombinants
Descriptors: Reducing agents
Descriptors: Selenium
Descriptors: Thiols
Descriptors: selenite
Descriptors: Article Taxonomic Terms: Escherichia coli
Descriptors: Methanococcus
Descriptors: Methanococcus vannielii
Abstract: A selenium-binding protein (SeBP) from Methanococcus vannielii was recently identified, and its gene was isolated and overexpressed in Escherichia coli [Self, W. T., Pierce, R. & Stadtman, T. C. (2004) IUBMB Life 56, 501-507]. SeBP and recombinant SeBP (rSeBP) migrated as approximately 42-kDa species on native gels and as approximately 33-kDa species on SDS gels. rSeBP consists of identical 8.8-kDa subunits, each containing a single cysteine residue. rSeBP isolated in the absence of reducing agents contained oxidized cysteine (89%) and very little bound selenium (0.05 eq or less per subunit). Complete reduction of the oxidized cysteine residues in rSeBP with Tris(2-carboxyethyl)phosphine required addition of a denaturant, such as 1 M guanidine-hydrochloride. With selenite as the selenium source and the isolated reduced protein as sole reductant, binding of one selenium per tetramer under anaerobic conditions required four cysteine thiol groups, one on each subunit. In the corresponding reaction, with reduced glutathione (GSH), equimolar amounts of selenodiglutathione (GSSeSG) and glutathione disulfide are formed from selenite and 4 GSH. At GSH-to-selenite ratios >4:1, conversion of GSSeSG to a perselenide derivative, GSSe super(-), occurs. However, with the reduced rSeBP as sole electron donor in the reaction with selenite, further conversion of the R-SSeS-R product apparently did not occur. Prior alkylation of the cysteine thiol groups in reduced rSeBP prevented selenite reduction and selenium binding under comparable conditions.
Publisher: National Academy of Sciences, 2101 Constitution Ave. Washington DC 20418 USA
English
Publication Type: Journal Article
Classification: G 07320 Bacterial genetics
Classification: J 02727 Amino acids, peptides and proteins
Classification: O 4080 Pollution - Control and Prevention
Classification: Q1 01421 Migrations and rhythms
Classification: Q5 01503 Characteristics, behavior and fate
Subfile: ASFA 3: Aquatic Pollution & Environmental Quality; ASFA 1: Biological Sciences & Living Resources; Oceanic Abstracts; Microbiology Abstracts B: Bacteriology; Genetics Abstracts Code: NO TOXICANT.

Paudyal, B. P. (Poisoning : Pattern and Profile of Admitted Cases in a Hospital in Central Nepal. *Jnma j nepal med assoc. 2005 jul-sep; 44(159):92-6. [Jnma; journal of the nepal medical association]: JNMA J Nepal Med Assoc.*
Chem Codes: ABSTRACT: An analysis of all poisoning cases admitted in medical and pediatric wards of Patan Hospital for one year (1st Jan to 31st Dec 2004) was carried out. A total of 154 cases were admitted which was 0.8% of total hospital admissions. Females outnumbered males and almost two-thirds patients were young adults (15-34 years). Seasonal variation in poisoning was observed with more cases in the summer months. Organophosphorus compounds (42%), drugs (25%), and zinc phosphide (6.5%) were common poisonings in total and in adult populations, whereas kerosene was the most frequent poisoning in pediatric age group. Paracetamol, benzodiazepines, and tricyclic antidepressants were the most frequently used drugs. The circumstances of poisoning were intentional (75%) and accidental (20%); most of the

childhood poisonings were accidental in nature. The mean hospital stay for all type of poisoning was 7.5 days; whereas it was 10.2 days for organophosphorus, 2.5 days for paracetamol, and 1.5 days each for zinc phosphide and kerosene ingestion. Intensive care unit (ICU) service was required in 17% of patients; and almost 25% developed complications. Aspiration pneumonia and respiratory failure were the most frequently observed complications. Ninety four percent of admitted patients recovered completely; leaving a mortality rate of 5%.
MESH HEADINGS: Accidents, Home
MESH HEADINGS: Adolescent
MESH HEADINGS: Adult
MESH HEADINGS: Age Distribution
MESH HEADINGS: Aged
MESH HEADINGS: Child
MESH HEADINGS: Child, Preschool
MESH HEADINGS: Developing Countries
MESH HEADINGS: Emergency Treatment/*methods
MESH HEADINGS: Female
MESH HEADINGS: Hospitalization/statistics &amp
MESH HEADINGS: numerical data
MESH HEADINGS: Hospitals, Community
MESH HEADINGS: Humans
MESH HEADINGS: Incidence
MESH HEADINGS: Intensive Care Units
MESH HEADINGS: Male
MESH HEADINGS: Middle Aged
MESH HEADINGS: Nepal/epidemiology
MESH HEADINGS: Organophosphorus Compounds/*poisoning
MESH HEADINGS: Overdose/mortality
MESH HEADINGS: Phosphines/*poisoning
MESH HEADINGS: Poisoning/*diagnosis/*epidemiology/therapy
MESH HEADINGS: Retrospective Studies
MESH HEADINGS: Risk Assessment
MESH HEADINGS: Sex Distribution
MESH HEADINGS: Suicide, Attempted/statistics &amp
MESH HEADINGS: numerical data
MESH HEADINGS: Survival Analysis
MESH HEADINGS: Zinc Compounds/*poisoning Code: HUMAN HEALTH.

Plumlee, K. H. (2001). Pesticide Toxicosis in the Horse. *Vet. Clin. North Am., Equine Pract.* 17: 491-500.
Chem Codes: Chemical of Concern: ZnP Code : REFS CHECKED,REVIEW.

Potter, W. T., Garry, V. F., Kelly, J. T., Tarone, R., Griffith, J., and Nelson, R. L (1993). Radiometric assay of red cell and plasma cholinesterase in pesticide appliers from Minnesota. *Toxicol. Appl. Pharmacol.* 119: 150-5.
Chem Codes: The uses of radiometric assay to detect anticholinesterases in a human population (N = 80) exposed to a broad spectrum of pesticides was demonstrated. The assay is nondilutional; therefore, anticholinesterase (AChE) agents with low binding affinity can be detected. Initial results showed statistically significant exposure-related decreases in either red cell AChE or plasma cholinesterase activity [(butyryl cholinesterase; BuChE] occurred not only among pesticide appliers who use organophosphates, but also among appliers of the fumigant phosphine. These data extend earlier observations made in lab. animals exposed to this fumigant. Significant exposure-related decreases in AChE activity were seen in herbicide appliers and appear to be assocd. with exposure to the herbicide 2-methoxy-3,6-dichlorobenzoic acid. There was no evidence of exposure-related decreases in BuChE activity in herbicide appliers. In-vivo data, coupled with preliminary in-vitro studies of phosphine (50% AChE inhibition, 10 ppm) and 2-methoxy-3,6-chlorobenzoic acid (50% AChE and BuChE inhibition, 70 ppm), suggested that the radiometric assay can be used to detect a broader spectrum of biol. active anticholinesterase agents. [on SciFinder (R)] TXAPA9 0041-008X Copyright: Copyright (C) 2010 ACS on SciFinder (R))

Database: CAPLUS
Accession Number: AN 1993:197185
Chemical Abstracts Number: CAN 118:197185
Section Code: 59-5
Section Title: Air Pollution and Industrial Hygiene
CA Section Cross-References: 4, 5, 9
Document Type: Journal
Language: written in English.
Index Terms: Blood plasma; Erythrocyte (cholinesterase activity in, occupational exposure to pesticide effect on, radiometric assay of); Hygiene (cholinesterase activity inhibition in organophosphate pesticide exposure in relation to); Pesticides (organophosphate, occupational exposure to, erythrocyte and plasma cholinesterase inhibition by, radiometric assay of); Health hazard (occupational, of organophosphate pesticide, in pesticide applicators, cholinesterase activity inhibition in relation to)
CAS Registry Numbers: 9001-08-5 (Cholinesterase) Role: ADV (Adverse effect, including toxicity), BIOL (Biological study) (in erythrocytes and blood plasma, occupational exposure to organophosphate pesticide effect on, in humans); 1918-00-9; 7803-51-2 (Phosphine) Role: ADV (Adverse effect, including toxicity), BIOL (Biological study) (occupational exposure to, erythrocyte and plasma cholinesterase activity inhibition in, in pesticide workers) radiometric/ assay/ cholinesterase/ pesticide/ worker;/ occupational/ health/ hazard/ pesticide/ exposure Code: HUMAN HEALTH.

Prakash, I. and Mathur, R. P. (1992). Acute Rodenticides. *In: I.Prakash and P.K.Ghosh (Eds.), Rodents in Indian Agriculture, Volume 1, State of the Art, Sci.Publ., Jodhpur, India* 497-515.
Code: REVIEW.

Prakash, I. and Mathur, R. P. (1992). Acute Rodenticides. *In: I.Prakash and P.K.Ghosh (Eds.), Rodents in Indian Agriculture, Volume 1, State of the Art, Sci.Publ., Jodhpur, India* 497-515.
Chem Codes: EcoReference No.: 75528
Chemical of Concern: As,Ba,NaFA,RSG,STCH,Tl,Urea,ZnP Code: REVIEW.

Price, N. R. (1985). The Mode of Action of Fumigants. *Journal of Stored Products Research [J. STORED PROD. RES.]*. 21, 157-164. 1985.
Chem Codes: Descriptors: Article Subject Terms: fumigants
Descriptors: toxicity
Descriptors: Article Taxonomic Terms: Insecta
Abstract: Studies on the action of the widely used fumigants, hydrogen cyanide, phosphine, methyl bromide, carbon tetrachloride, ethylene dichloride, and ethylene dibromide, are reviewed with a view to establishing some of the biochemical lesions responsible for the toxicity of fumigants to insects. The modes of action of ethylene oxide, carbon disulphide, sulphuryl fluoride, and methyl chloroform are also briefly discussed.
English
Publication Type: Journal Article
Publication Type: Review
Classification: Z 05183 Toxicology & resistance
Subfile: Entomology Abstracts Code: REVIEW.

Quistad, Gary B., Sparks, Susan E., and Casida, John E (2000). Chemical model for phosphine-induced lipid peroxidation. *Pest Manage. Sci.* 56: 779-783.
Chem Codes: Phosphine (PH3) from hydrolysis of metal phosphides is highly toxic and is important for control of stored-product insect pests (AIP, Mg3P2) and rodents (Zn3P2). This fumigant inhibits respiration and induces lipid peroxidn. in insects and mammals. PH3 (from Mg3P2) and H2O2, acting for 15 min in phosphate buffer (pH 7.4), oxidized cod liver oil (high in unsatd. lipids) to malondialdehyde. Both Mg3P2 and H2O2 were found to be necessary for this lipid peroxidn., which under optimal conditions produced a seven-fold increase in malondialdehyde relative to basal levels in cod liver oil with H2O2, but no PH3. Under the same conditions, 15-, 9- and 2-fold increases in malondialdehyde were obtained from Et arachidonate, Me linoleate and Me oleate. Small amts. of hydroxyl radical from PH3/H2O2 were trapped with salicylic acid. Reactive oxygen species for lipid peroxidn. may therefore be derived from

direct reaction of PH3 with H2O2 as an alternative hypothesis to their respiration-linked formation. [on SciFinder (R)] PMSCFC 1526-498X Copyright: Copyright (C) 2010 ACS on SciFinder (R))
Database: CAPLUS
Accession Number: AN 2000:643534
Chemical Abstracts Number: CAN 133:277346
Section Code: 4-4
Section Title: Toxicology
CA Section Cross-References: 5
Document Type: Journal
Language: written in English.
Index Terms: Peroxidation (lipid; phosphine-induced lipid peroxidn.); Cod liver oil Role: BPR (Biological process), BSU (Biological study, unclassified), BIOL (Biological study), PROC (Process) (peroxidn. by hydrogen peroxide in presence of phosphide); Lipids Role: BPR (Biological process), BSU (Biological study, unclassified), BIOL (Biological study), PROC (Process) (peroxidn.; phosphine-induced lipid peroxidn.); Reactive oxygen species Role: BSU (Biological study, unclassified), BIOL (Biological study) (role in lipid peroxidn. by hydrogen peroxide in presence of phosphide)
CAS Registry Numbers: 542-78-9 (Malondialdehyde.) Role: BSU (Biological study, unclassified), MFM (Metabolic formation), BIOL (Biological study), FORM (Formation, nonpreparative) (lipid peroxidn. product by hydrogen peroxide in presence of phosphide); 112-62-9 (Methyl oleate.); 112-63-0 (Methyl linoleate); 1808-26-0 (Ethyl arachidonate) Role: BPR (Biological process), BSU (Biological study, unclassified), BIOL (Biological study), PROC (Process) (peroxidn. by hydrogen peroxide in presence of phosphide); 7803-51-2 (Phosphine); 12057-74-8 (Magnesium phosphide) Role: ADV (Adverse effect, including toxicity), BAC (Biological activity or effector, except adverse), BSU (Biological study, unclassified), BIOL (Biological study) (phosphine-induced lipid peroxidn.); 7782-44-7D (Oxygen) Role: BSU (Biological study, unclassified), BIOL (Biological study) (role in lipid peroxidn. by hydrogen peroxide in presence of phosphide)
Citations: 1) Tomlin, C; The Pesticide Manual, 11 th edn 1997, 967
Citations: 2) World Health Organization; Environ Health Criteria 1988, 73, 1
Citations: 3) Singh, S; Clin Toxicol 1996, 34, 703
Citations: 4) Gupta, S; Clin Toxicol 1995, 33, 19
Citations: 5) Chaudhry, M; Pestic Sci 1997, 49, 213
Citations: 6) Nakakita, H; Nihon Noyaku Gakkaishi (J Pestic Sci) 1976, 1, 235
Citations: 7) Nakakita, H; Nihon Noyaku Gakkaishi (J Pestic Sci) 1987, 12, 299
Citations: 8) Chefurka, W; Pestic Biochem Physiol 1976, 6, 65
Citations: 9) Price, N; Insect Biochem 1980, 10, 147
Citations: 10) Bolter, C; Arch Biochem Biophys 1990, 278, 65
Citations: 11) Bolter, C; Pestic Biochem Physiol 1990, 36, 52
Citations: 12) Chaudhry, M; Pestic Biochem Physiol 1992, 42, 167
Citations: 13) Chugh, S; Indian J Med Res 1996, 104, 190
Citations: 14) Hsu, C; Free Rad Biol Med 2000, 28, 636
Citations: 15) Hsu, C; Toxicol Sci 1998, 46, 204
Citations: 16) Lall, S; Indian J Exper Biol 1997, 35, 1060
Citations: 17) Esterbauer, H; Meth Enzymol 1990, 186, 407
Citations: 18) Tamura, H; J Agric Food Chem 1991, 39, 439
Citations: 19) Yeo, H; Anal Biochem 1994, 220, 391
Citations: 20) Kaur, H; Meth Enzymol 1994, 233, 67
Citations: 21) Miyake, T; Food Chem Toxicol 1996, 34, 1009
Citations: 22) Goswami, M; Indian J Exper Biol 1994, 32, 647
Citations: 23) Lam, W; J Agric Food Chem 1991, 39, 2274
Citations: 24) Kashi, K; Pestic Biochem Physiol 1976, 6, 350
Citations: 25) Ferri, A; Biochem Molec Biol Int 1995, 35, 691
Citations: 26) Halliwell, B; Environ Health Perspect 1994, 102(Suppl 10), 5
Citations: 27) Bond, E; J Stored Prod Res 1967, 3, 289
Citations: 28) Richter, C; Biosci Rep 1997, 17, 53 phosphine/ lipid/ peroxidn Code: IN VITRO.

Ramesh, P. (1992). The Short-Tailed Mole-Rat Nesokia Indica Gray. *In: I.Prakash and P.K.Ghosh (Eds.), Rodents*

in Indian Agriculture, Volume 1, State of the Art, Sci.Publ., Jodhpur, India 165-171.
Code: REFS CHECKED/REVIEW.

Ramesh, P. (1992). The Short-Tailed Mole-Rat Nesokia indica Gray. *In: I.Prakash and P.K.Ghosh (Eds.), Rodents in Indian Agriculture, Volume 1, State of the Art, Sci.Publ., Jodhpur, India* 165-171.
Chem Codes: Chemical of Concern: ZnP Code: REFS CHECKED,REVIEW.

Rao, A. M. K. M. (1992). Integrated Rodent Management. *In: I.Prakash and P.K.Ghosh (Eds.), Rodents in Indian Agriculture, Volume 1, State of the Art, Sci.Publ., Jodhpur, India* 651-667.
Code: REVIEW.

Rao, A. M. K. M. (1992). Integrated Rodent Management. *In: I.Prakash and P.K.Ghosh (Eds.), Rodents in Indian Agriculture, Volume 1, State of the Art, Sci.Publ., Jodhpur, India* 651-667.
Chem Codes: EcoReference No.: 75527
Chemical of Concern: BDL,ZnP Code: REVIEW.

Reed, Carl and Pan, Hongde (2000). Loss of phosphine from unsealed bins of wheat at six combinations of grain temperature and grain moisture content. *J. Stored Prod. Res.* 36: 263-279.
Chem Codes: Hard red winter wheat (1.4 t) at 11.1 or 13.5% moisture content (wet basis) and 20, 25, or 30 Deg was fumigated with tablets of an aluminum phosphide formulation in unsealed, cylindrical grain bins of corrugated metal. The fumigant leakage rate was manipulated to approx. that commonly encountered in farm and com.-scale bins of this type. Phosphine concn. profiles were recorded and phosphine loss and sorption were characterized to det. which conditions provided the greatest probability of successful fumigation in these bins. Phosphine leakage and sorption were both pos. related to grain temp. and moisture content. The fumigant concn. profiles were compared with previously-published data relating temp. to the developmental rate and fumigant susceptibility of lesser grain borer eggs, which are phosphine-resistant, but become less resistant as they age. The mean phosphine concn. obsd. at the time corresponding to one-half of the calcd. egg development time was compared to the lethal concn. (LC99) for a 2-day exposure at each temp.-moisture combination. In the low-moisture grain at 20 Deg, the obsd. fumigant concn. was below the lethal concn., due to the long development time under these conditions. At 25 and 30 Deg in the low-moisture wheat, the likelihood of complete kill appeared more favorable because the fumigant concn. remained above the published LC99 for more than half of the egg development time. In the wheat with 13.5% moisture content, rapid fumigant sorption and loss resulted in phosphine concns. below the LC99 at one-half of the development time at 20 or 25 Deg. At 30 Deg, due to the very rapid development rate, the obsd. phosphine concn. exceeded the LC99 half-way through the egg development period despite the rapid rate of fumigant sorption and loss. Repeated fumigation of the same grain reduced the rate at which phosphine sorbed into the grain. [on SciFinder (R)] JSTPAR 0022-474X Copyright: Copyright (C) 2010 ACS on SciFinder (R))
Database: CAPLUS
Accession Number: AN 2000:450775
Chemical Abstracts Number: CAN 133:160840
Section Code: 5-4
Section Title: Agrochemical Bioregulators
Document Type: Journal
Language: written in English.
Index Terms: Fumigation; Temperature effects; Winter wheat (effect of grain temp. and moisture content on phosphine loss and sorption in fumigated unsealed bins of wheat)
CAS Registry Numbers: 7803-51-2 (Phosphine) Role: AGR (Agricultural use), BIOL (Biological study), USES (Uses) (effect of grain temp. and moisture content on phosphine loss and sorption in fumigated unsealed bins of wheat)
Citations: Annis, P; Proceedings of the International Conference on Controlled Atmospheres and Fumigation of Grain Storages 1993, 299
Citations: Association of Official Analytical Chemists; Official Method 965.17 1995
Citations: ASEAN Food Handling Bureau/ACIAR; Principles and general practice 1989
Citations: Banks, H; Proceedings of an international conference 1990
Citations: Banks, H; ACIAR Proceedings 1989, 25, 96

Citations: Banks, H; Journal of Stored Products Research 1991, 27, 41
Citations: Banks, H; Proceedings of the International Conference on Controlled Atmospheres and Fumigations of Grain Storages 1993, 241
Citations: Berck, B; Journal of Agricultural and Food Chemistry 1968, 16, 419
Citations: Bruce, R; Journal of Agricultural and Food Chemistry 1962, 10, 18
Citations: Cotton, R; Journal of Economic Entomology 1963, 29, 514
Citations: Dumas, T; Journal of Agricultural and Food Chemistry 1980, 28, 337
Citations: Hagstrum, D; Annals of the Entomological Society of America 1988, 81, 539
Citations: Harris, A; GASGA Seminar on fumigation technology in developing countries 1986, 56
Citations: Hilton, H; Journal of Agricultural and Food Chemistry 1972, 20, 1209
Citations: Hole, B; Journal of Stored Products Research 1976, 12, 235
Citations: Hoseney, R; Principles of Cereal Science and Technology 1994
Citations: Lingren, D; Journal of Stored Products Research 1966, 2, 141
Citations: Mulhearn, P; Journal of Stored Products Research 1976, 12, 129
Citations: Rauscher, H; Journal of Agricultural and Food Chemistry 1972, 20, 331
Citations: Reed, C; Kansas Ag Exp Station Bull 660 1993
Citations: Robinson, J; Journal of Stored Products Research 1970, 6, 133
Citations: Sinha, A; Bulletin of Grain Technology 1979, 17, 48
Citations: Skidmore, J; Thesis Kansas State University 1989
Citations: SAS Institute; SAS User's Guide 1985
Citations: Tkachuk, R; Cereal Chemistry 1972, 49, 258
Citations: Winks, R; Journal of Stored Products Research 1984, 20, 45
Citations: Winks, R; Proceedings of the 4th International Working Conference on Stored-Product Protection 1987, 335 phosphine/ wheat/ fumigation/ moisture/ temp Code: FATE.

Rulon, R. A., Maier, D. E., and Boehlje, M. D. (1999). A Post-Harvest Economic Model to Evaluate Grain Chilling as an Ipm Technology. *Journal of Stored Products Research, 35 (4) pp. 369-383, 1999.*
Chem Codes: Descriptors: Economic analysis
Descriptors: Costs and benefits
Descriptors: Grain chilling
Descriptors: Insect control
Descriptors: Integrated pest management
Abstract: A spreadsheet model was developed to evaluate the economic costs of new post-harvest integrated pest management technologies, such as grain chilling, against traditional pest control methods, such as phosphine fumigation. The model considers 34 factors including electrical power consumption, capital investment cost, chemical costs, and less quantifiable factors such as worker safety, environmental issues, and changes in end-product value. When applied to the storage of popcorn, a high value speciality crop, and wheat, the annual operating costs of chilled aeration compared to phosphine fumigation with ambient aeration were up to 128 and 300% lower, respectively. The effect of high capital investment with low variable costs, as with chilled aeration, was compared to the low capital investment and high variable costs of phosphine fumigation using a multi-year Net Present Cost (NPC) model. For the case studies evaluated, the NPC of chilled aeration ranged from -122 to 197% of that for in-house fumigation with ambient aeration. Chilling of popcorn became economically feasible if a premium of less than one cent per retail bag could be obtained for popcorn labeled post-harvest pesticide-free. Chiller unit prices of US dollar-sign 80,000-90,000 were found to be a reasonable capital expenditure for this alternative integrated pest management technology.
17 refs.
English
Publication Type: Journal
Publication Type: Article
Country of Publication: United Kingdom
Classification: 92.10.4.6 CROP SCIENCE: Crop Protection: Integrated pest management
Subfile: Plant Science Code: MODELING.

Rush, G. F., Smith, P. F., Hoke, G. D., Alberts, D. W., Snyder, R. M., and Mirabelli, C. K. (The Mechanism of Acute Cytotoxicity of Triethylphosphine Gold(I) Complexes. Ii. Triethylphosphine Gold Chloride-Induced

Alterations in Mitochondrial Function. *Toxicol appl pharmacol. 1987, sep 30; 90(3):391-400. [Toxicology and applied pharmacology]: Toxicol Appl Pharmacol.*
Chem Codes: ABSTRACT: Triethylphosphine gold complexes have therapeutic activity in the treatment of rheumatoid arthritis. Many of these compounds are also highly cytotoxic in vitro to a variety of tumor and non-tumor cell lines. Triethylphosphine gold chloride (TEPAu) is highly cytotoxic to isolated rat hepatocytes at concentrations greater than 25 microM. The earliest changes that could be detected in hepatocytes included bleb formation in the plasma membrane, alterations in the morphology of mitochondria, and rapid decreases in cellular ATP and oxygen consumption. The degradation of ATP could be followed sequentially through ADP and AMP and was ultimately accounted for entirely as xanthine. The sum of adenine and xanthine-derived nucleotides remained constant throughout the experiments. TEPAu (50 microM) caused a significant decrease in the hepatocyte ATP/ADP ratio and energy charge within 5 min. The antioxidant, N,N'-diphenyl-p-phenylenediamine (DPPD), which blocked TEPAu-induced malondialdehyde formation but not cell death, also had no effect on the decreases in oxygen consumption, ATP, ATP/ADP ratio, or energy charge. In isolated rat liver mitochondria, TEPAu (1 microM) caused significant reductions in carbonyl cyanide-4-trifluoromethoxyphenylhydrazone (FCCP) (uncoupled)-stimulated respiration. TEPAu (5 microM) inhibited state 3 respiration and the respiratory control ratio without affecting state 4 respiration and caused a rapid dissipation of the mitochondrial-membrane hydrogen-ion gradient (membrane potential). Concentrations greater than 5 microM also inhibited state 4 respiration. TEPAu caused a concentration-dependent inhibition of FCCP-stimulated respiration with pyruvate/malate and succinate as substrates but had not effect on ascorbate/tetramethyl-p-phenylenediamine-supported respiration. The inhibition of state 4 respiration and FCCP-stimulated respiration by TEPAu (10 microM) could be reversed by the addition of 2 mM dithiothreitol. Dithiothreitol also partially protected cells from TEPAu-induced injury and reversed the TEPAu-induced depletion in cellular ATP. These data indicate that TEPAu may be acting functionally as a respiratory site II inhibitor, similar to antimycin. The reversal of TEPAu-induced inhibition of mitochondrial respiration and cell lethality by dithiothreitol suggests that mitochondrial thiols may be involved.
MESH HEADINGS: Adenosine Triphosphate/metabolism
MESH HEADINGS: Animals
MESH HEADINGS: Anti-Inflammatory Agents, Non-Steroidal/*toxicity
MESH HEADINGS: Carbonyl Cyanide p-Trifluoromethoxyphenylhydrazone/pharmacology
MESH HEADINGS: Cell Survival/drug effects
MESH HEADINGS: Dithiothreitol/pharmacology
MESH HEADINGS: Electron Transport/drug effects
MESH HEADINGS: Male
MESH HEADINGS: Mitochondria, Liver/*drug effects/metabolism
MESH HEADINGS: Organogold Compounds
MESH HEADINGS: Organometallic Compounds/*toxicity
MESH HEADINGS: Organophosphorus Compounds/*toxicity
MESH HEADINGS: Oxygen Consumption/drug effects
MESH HEADINGS: *Phosphines
MESH HEADINGS: Rats
MESH HEADINGS: Rats, Inbred Strains Code: IN VITRO.

Salunke B.K., Prakash, K., Vishwakarma K.S., and Maheshwari V.L. (2009). Plant Metabolites: an Alternative and Sustainable Approach Towards Post Harvest Pest Management in Pulses. *Physiology and Molecular Biology of Plants, vol. 15, no. 3, pp. 185-197, 2009.*
Chem Codes: Descriptors: Hexapoda
Abstract: Grain legumes are an important source of proteins in vegetarian diet besides their role in biological nitrogen fixation. They are prone to heavy pest infestation both on and off the field. Pest associated losses are an important contributing factor towards declining per capita availability of grain legumes. Synthetic chemical pesticides have played an important role in crop preservation, however their incessant use has posed several environmental and human health concerns. Methyl bromide and phosphine are commonly used for the post harvest preservation of grain legumes. However, the former has to be phased out by 2015 as per the Montreal protocol whereas the latter is showing development of resistance to it by the insects. In the light of this, alternative, safer and sustainable strategies are needed for crop protection. Plants can serve as a rich source of bioactive chemicals for this purpose. Both primary as well

as secondary metabolites can be evaluated against the target pests. The paper reviews the status of research in the area of use of plant metabolites in post harvest pest management of grain legumes. Â© Prof. H.S. Srivastava Foundation for Science and Society 2009.
Publication Type: Journal
Publication Type: Review
74 refs.
Country of Publication: India
Subfile: Plant Science; CABS 23e2b5c7-14f3-4fa7-b6d1csamfg301
English
DOI: 10.1007/s12298-009-0023-9
Classification: CABSCLASS
Classification: 92.10.4.3, PLANT SCIENCE
Classification: CROP SCIENCE
Classification: Crop Protection
Classification: Pests
Classification: CABSCLASS
Classification: 92.10.4.5, PLANT SCIENCE
Classification: CROP SCIENCE
Classification: Crop Protection
Classification: Biological control Code: REVIEW.

Saxena, Y. (1993). Histopathological and Biochemical Impact of Zinc Phosphide on Rattus Rattus Rufescens. *In: V.P.Agrawal, S.A.H.Abidi, and G.P.Verma (Eds.), Seminar on Environmental Impact on Aquatic & Terrestiral Habitats, Dec.1991, Berhampur, India* 163-170.
Code: REFS CHECKED/REVIEW.

Saxena, Y. (1993). Histopathological and Biochemical Impact of Zinc Phosphide on Rattus rattus Rufescens. *In: V.P.Agrawal, S.A.H.Abidi, and G.P.Verma (Eds.), Seminar on Environmental Impact on Aquatic & Terrestiral Habitats, Dec.1991, Berhampur, India* 163-170.
Chem Codes: Chemical of Concern: Zn,ZnP Code: REFS CHECKED,REVIEW.

Schoof, H. F. (1970). Zinc Phosphide as a Rodenticide. *Pest Control* 38: 38, 42-44.
Chem Codes: Chemical of Concern: ZnP Code: NO DURATION.

Scudamore, K. A. and Goodship, G. (1986). Determination of Phosphine Residues in Fumigated Cereals and Other Foodstuffs. *Pestic sci* 17: 385-395.
Chem Codes: ABSTRACT: BIOSIS COPYRIGHT: BIOL ABS. RRM NUTS FUMIGANT GRAIN PRODUCTS FOOD RESIDUE DETECTION LIMIT
MESH HEADINGS: FOOD TECHNOLOGY
MESH HEADINGS: FRUIT
MESH HEADINGS: NUTS
MESH HEADINGS: VEGETABLES
MESH HEADINGS: CEREALS
MESH HEADINGS: FOOD TECHNOLOGY
MESH HEADINGS: FOOD ANALYSIS
MESH HEADINGS: FOOD TECHNOLOGY
MESH HEADINGS: FOOD-PROCESSING INDUSTRY
MESH HEADINGS: FOOD TECHNOLOGY
MESH HEADINGS: FOOD ADDITIVES/POISONING
MESH HEADINGS: FOOD ADDITIVES/TOXICITY
MESH HEADINGS: FOOD CONTAMINATION
MESH HEADINGS: FOOD POISONING
MESH HEADINGS: FOOD PRESERVATIVES/POISONING
MESH HEADINGS: FOOD PRESERVATIVES/TOXICITY
MESH HEADINGS: HERBICIDES
MESH HEADINGS: PEST CONTROL

MESH HEADINGS: PESTICIDES
MESH HEADINGS: ARACHNIDA
MESH HEADINGS: ENTOMOLOGY/ECONOMICS
MESH HEADINGS: INSECTICIDES
MESH HEADINGS: PEST CONTROL
MESH HEADINGS: PESTICIDES
KEYWORDS: Food Technology-Fruits
KEYWORDS: Food Technology-Cereal Chemistry
KEYWORDS: Food Technology-Evaluations of Physical and Chemical Properties (1970-)
KEYWORDS: Food Technology-Preparation
KEYWORDS: Toxicology-Foods
KEYWORDS: Pest Control
KEYWORDS: Economic Entomology-Chemical and Physical Control Code: FOOD.

Sheikher, C. and Jain, S. D. (1991). Rodent Damage and Control in Pecan Orchards. *Proc.Indian Natl.Sci.Acad.Part B* 57: 391-396 .
Code: MIXTURE.

Singh, S., Bhalla, A., Verma, S. K., Kaur, A., and Gill, K. (Cytochrome-C Oxidase Inhibition in 26 Aluminum Phosphide Poisoned Patients. *Clin toxicol (phila). 2006; 44(2):155-8. [Clinical toxicology (philadelphia, pa.)]: Clin Toxicol (Phila).*
Chem Codes: COMMENTS: Comment in: Clin Toxicol (Phila). 2007 Jun-Aug;45(5):461; author reply 462 (medline /17503245)
ABSTRACT: INTRODUCTION: Aluminum phosphide (ALP) is used worldwide to fumigate grain. ALP poisoning, though reported from different parts of world, is most common in north, northwest and central India. In the presence of moisture, ALP liberates phosphine, which is highly toxic. The mechanism of action of phosphine is not known though experimental studies show that it inhibits cytochrome-c oxidase leading to inhibition of mitochondrial oxidative phosphorylation. PATIENTS AND METHODS: We estimated cytochrome-c oxidase activity in platelets of patients who had ingested ALP and compared them with those in healthy controls and in patients with shock due to other causes (cardiogenic shock, septic shock and hemorrhagic shock). RESULTS: After analysis of variance using Kruskal-Wallis test followed by Mann Whitney U test, significant inhibition of cytochrome-c oxidase activity could be found in ALP-poisoned patients compared to healthy controls ($z = -5.513$, $p < 0.001$) and in patients with shock due to other causes ($z = -2.344$; $p < 0.05$). There was no significant difference in inhibition in those who survived ALP poisoning compared to those who died from ALP poisoning ($t = 0.02768$; $p > 0.05$). CONCLUSION: Though inhibition of cytochrome-c oxidase in platelets does not have prognostic value, it suggests that interruption of mitochondrial oxidative phosphorylation as a result of cytochrome-c oxidase inhibition may lead to multi-organ dysfunction and therapeutic strategies to maintain enzyme activity may help in managing these patients.
MESH HEADINGS: Adolescent
MESH HEADINGS: Adult
MESH HEADINGS: Aluminum Compounds/*poisoning
MESH HEADINGS: Analysis of Variance
MESH HEADINGS: Electron Transport Complex IV/*antagonists &amp
MESH HEADINGS: inhibitors
MESH HEADINGS: Enzyme Inhibitors/*poisoning
MESH HEADINGS: Female
MESH HEADINGS: Humans
MESH HEADINGS: Male
MESH HEADINGS: Middle Aged
MESH HEADINGS: Phosphines/*poisoning
MESH HEADINGS: Poisoning/enzymology/mortality
MESH HEADINGS: Survival Analysis Code: HUMAN HEALTH.

Smith, P. F., Hoke, G. D., Alberts, D. W., Bugelski, P. J., Lupo, S., Mirabelli, C. K., and Rush, G. F. (Mechanism of Toxicity of an Experimental Bidentate Phosphine Gold Complexed Antineoplastic Agent in Isolated Rat

Hepatocytes. *J pharmacol exp ther. 1989, jun; 249(3):944-50. [The journal of pharmacology and experimental therapeutics]: J Pharmacol Exp Ther.*
Chem Codes: ABSTRACT: SK&F 104524 (bis-[1,2 bis(diphenylphosphino)-ethane]gold(l) lactate) [(Au(dppe)2]+) is an experimental antineoplastic agent that is hepatotoxic in vivo in the dog as well as highly cytotoxic to isolated canine hepatocytes in vitro. Preliminary studies in isolated dog hepatocytes have indicated that [Au(dppe)2]+ causes an increase in hepatocyte respiration and a decrease in cellular ATP. The purpose of the present investigation was to characterize [Au(dppe)2]+-induced cytotoxicity and biochemical lesions in the intact cell and to correlate these changes with mitochondrial function. The uptake of [14C][Au(dppe)2]+ by rat hepatocytes was rapid, reaching a maximum by 30 min. [Au(dppe)2]+ was distributed throughout the hepatocyte and associated rapidly with mitochondria, nuclei, cytosol and cellular membranes. [Au(dppe)2]+ caused cell lethality in a concentration-dependent fashion; although 5 microM did not cause any changes in lactic dehydrogenase leakage, 20 microM produced 100% cell death by 120 min. [Au(dppe)2]+ also caused concentration-dependent bleb formation of the hepatocyte plasma membrane, increased oxygen consumption and loss of ATP within 30 min. ATP loss was associated with transient increases in AMP and ADP and a profound drop in the ATP/ADP ratio and energy charge. Total nucleotides (adenine and xanthine nucleotides) remained constant. The pattern of glutathione depletion coincided with that of lactic dehydrogenase leakage. Electron microscopy of hepatocytes exposed to [Au(dppe)2]+ for 30 min revealed depletion of glycogen granules and marked swelling of mitochondria. In isolated rat liver mitochondria, [Au(dppe)2]+ caused a stimulation of state 4 respiration and loss of the respiratory control ratio. [Au(dppe)2]+ also relieved the oligomycin-induced inhibition of state 3 (ADP-stimulated) respiration.(ABSTRACT TRUNCATED AT 250 WORDS)
MESH HEADINGS: Animals
MESH HEADINGS: Antineoplastic Agents/pharmacokinetics/*toxicity
MESH HEADINGS: Cell Membrane/drug effects
MESH HEADINGS: Cell Survival/drug effects
MESH HEADINGS: Cells, Cultured
MESH HEADINGS: Glutathione/metabolism
MESH HEADINGS: Liver/*drug effects/metabolism/ultrastructure
MESH HEADINGS: Male
MESH HEADINGS: Mitochondria, Liver/drug effects
MESH HEADINGS: Organogold Compounds
MESH HEADINGS: Organometallic Compounds/pharmacokinetics/*toxicity
MESH HEADINGS: Organophosphorus Compounds/pharmacokinetics/*toxicity
MESH HEADINGS: Oxygen Consumption/drug effects
MESH HEADINGS: Rats
MESH HEADINGS: Rats, Inbred Strains Code: IN VITRO.

Srivastava, D. C. (1992). Sugarcane. *In: I.Prakash and P.K.Ghosh (Eds.), Rodents in Indian Agriculture, Volume 1, State of the Art, Sci.Publ., Jodhpur, India* 231-248.
Code: REVIEW.

Srivastava, D. C. (1992). Sugarcane. *In: I.Prakash and P.K.Ghosh (Eds.), Rodents in Indian Agriculture, Volume 1, State of the Art, Sci.Publ., Jodhpur, India* 231-248.
Chem Codes: EcoReference No.: 75523
Chemical of Concern: BDF,BDL,WFN,ZnP Code: REVIEW.

Sterner, R. T. (1999). Pre-Baiting for Increased Acceptance of Zinc Phosphide Baits by Voles: an Assessment Technique. *Pestic.Sci.* 55: 553-557.
Chem Codes: Descriptors: Acute rodenticide
Descriptors: Bait effectiveness
Descriptors: Microtus spp
Descriptors: Pre-baits
Descriptors: Vole control
Descriptors: Zinc phosphide
Abstract: During a product-performance test of 2% zinc phosphide (Zn inferior 3P inferior 2) steam- rolled-oat groats (11.2 kg ha superior - superior 1) to control voles (Microtus spp) in alfalfa (Medicago sativa),

randomly located, brushed-dirt plots were used to assess broadcast distribution and removal/acceptance of placebo particles. Results showed that the Spyker registered trade mark sign Model-75 Spreaders were calibrated adequately, with placebo baits broadcast uniformly onto plots [x horizontal bar plus-or-minus SD=3.5 (plus-or-minus 2.7) groats 930 cm superior - superior 1]. Acceptance of the placebos by voles increased rapidly - 28% and 60% by 24 h and 48 h post-broadcast, respectively. Analyses of variance confirmed the uniformity (non-significance) of particles broadcast among enclosures/plots and the significantly greater removal/acceptance of placebos across days. This technique affords an objective decision-making tool for applicators and researchers applying Zn inferior 3P inferior 2 baits in field situations an objective technique of assessing pre-bait acceptance that should improve efficacy of the rodenticide.
14 refs.
English
Publication Type: Journal
Publication Type: Article
Country of Publication: United Kingdom
Classification: 92.10.1.5 CROP SCIENCE: Crop Physiology: Fertilizer effects
Classification: 92.10.2.1 CROP SCIENCE: Agronomy and Horticulture: Cereals
Classification: 92.10.4.6 CROP SCIENCE: Crop Protection: Integrated pest management
Classification: 92.11.1.8 PLANT PATHOLOGY AND SYMBIOSES: Plant Pathology: Other pests
Subfile: Plant Science Code: NO TOX DATA.

Sterner, R. T. (1999). Pre-baiting for Increased Acceptance of Zinc Phosphide Baits by Voles: An Assessment Technique. *Pestic. Sci.* 55: 553-557.
Chem Codes: Chemical of Concern: ZnP Code: NO TOX DATA.

Stowe, C. M., Nelson, R., Werdin, R., Fangmann, G., Fredrick, P., Weaver, G., and Arendt, T. D. (1978). Zinc Phosphide Poisoning in Dogs. *J. Am. Vet. Med. Assoc.* 173: 270.
Chem Codes: Chemical of Concern: ZnP Code: INCIDENT.

Subiah, K. S. and Mathur, R. P. (1992). Andamans With Special Reference to Oil Palm Plantations. *In: I.Prakash and P.K.Ghosh (Eds.), Rodents in Indian Agriculture, Volume 1, State of the Art, Sci.Publ., Jodhpur, India* 343-356.
Code: REFS CHECKED/REVIEW.

Subiah, K. S. and Mathur, R. P. (1992). Andamans with Special Reference to Oil Palm Plantations. *In: I.Prakash and P.K.Ghosh (Eds.), Rodents in Indian Agriculture, Volume 1, State of the Art, Sci.Publ., Jodhpur, India* 343-356.
Chem Codes: Chemical of Concern: BDL,WFN,ZnP Code: REFS CHECKED,REVIEW.

Taylor, R. W. D. (1994). Methyl Bromide - Is There Any Future for This Noteworthy Fumigant? *Journal of Stored Products Research [J. STORED PROD. RES.].* 30, 253-260. 1994.
Chem Codes: Descriptors: Article Subject Terms: air pollution
Descriptors: fumigants
Descriptors: stored products
Abstract: For many years methyl bromide has played a significant role in controlling insect pests in durable and perishable agricultural commodities, pests in the soil and in structures. Although about 10% of the chemical produced is used globally for disinfesting stored products its importance for that purpose cannot be understressed, since it is the only remaining fumigant in worldwide use other than phosphine. Methyl bromide is the only fumigant available for quarantine treatment of commodities where rapid disinfestation techniques are essential. Although methyl bromide arises from natural sources, principally the oceans, most of the chemical found in the stratosphere is now thought to originate from man-made sources. Methyl bromide has been formally listed as an ozone-depleting substance by the Parties to the Montreal Protocol, with agreement from 1995 to limit future production. Reviews of both the current uses of methyl bromide, and of potential substitutes should permit a decision on a general control scheme for the chemical by 1995. Separately, in the U.S.A., under the Clean Air Act, methyl bromide will be phased out by the year 2001. Other countries or political unions are also currently examining the feasibility of reducing the quantities of

methyl bromide used. Future restrictions on methyl bromide are expected to have a particular impact on developing countries, particularly those exporting agricultural products. This has been recognized in exempting these countries from the controls to be introduced in 1995. Despite many uncertainties regarding its role in ozone depletion it seems certain that methyl bromide will, eventually, be removed from the list of the few remaining products capable of preventing pest damage to food and other valuable commodities.
English
Publication Type: Journal Article
Classification: Z 05183 Toxicology & resistance
Subfile: Entomology Abstracts Code: REVIEW.

Tiwary, A. K., Puschner, B., Charlton, B. R., and Filigenzi, M. S. (Diagnosis of Zinc Phosphide Poisoning in Chickens Using a New Analytical Approach. *Avian dis. 2005, jun; 49(2):288-91. [Avian diseases]: Avian Dis*.
Chem Codes: ABSTRACT: Approximately 200 chickens were found dead after the flooring of a slat-and-litter house was breached. No clinical signs of illness were observed in the surviving birds. During necropsy, rolled oats were found in the chickens' crops and gizzards, and the contents had a petroleum-like odor. Histopathologic examination revealed severe pulmonary edema and congestion of the chickens' lungs, hearts, livers, and kidneys. Based on the history and necropsy findings, zinc phosphide exposure was suspected. Diagnosis of zinc phosphide poisoning has previously been based on history of exposure, identification of the bait material in the gastrointestinal tract, and chemical detection of phosphine gas. However, currently available diagnostic methods are nonconfirmatory, and may produce false positive results. The objective of this case report was to determine whether the sudden death described in these chickens was caused by the ingestion of zinc phosphide, by developing a sensitive and highly specific gas chromatography/mass spectrometry (GC/MS) methodology for analysis of the gastrointestinal samples submitted to the laboratory. It was also found that the determination of zinc concentrations in liver or kidney tissue or stomach contents is not a reliable indicator of zinc phosphide poisoning.
MESH HEADINGS: Animals
MESH HEADINGS: *Chickens
MESH HEADINGS: Crop, Avian/chemistry
MESH HEADINGS: Evaluation Studies as Topic
MESH HEADINGS: Fatal Outcome
MESH HEADINGS: Gas Chromatography-Mass Spectrometry/methods/*veterinary
MESH HEADINGS: Gastrointestinal Contents/*chemistry
MESH HEADINGS: Gizzard/chemistry
MESH HEADINGS: Kidney/chemistry
MESH HEADINGS: Liver/chemistry
MESH HEADINGS: Phosphines/*poisoning
MESH HEADINGS: Poisoning/diagnosis/veterinary
MESH HEADINGS: Poultry Diseases/*diagnosis
MESH HEADINGS: Zinc Compounds/*poisoning Code: NO CONC.

Va(circumflex)lcu, C. M. and Schlink, K. (2006). Reduction of Proteins During Sample Preparation and Two-Dimensional Gel Electrophoresis of Woody Plant Samples. *Proteomics, 6 (5) pp. 1599-1605, 2006*.
Chem Codes: Descriptors: Reducing agent
Descriptors: Sample preparation
Descriptors: Two-dimensional gel electrophoresis
Descriptors: Woody plant
Abstract: Protein extraction procedure and the reducing agent content (DTT, dithioerythritol, tributyl phosphine and tris (2-carboxyethyl) phosphine (TCEP)) of the sample and rehydration buffers were optimised for European beech leaves and roots and Norway spruce needles. Optimal extraction was achieved with 100 mM DTT for leaves and needles and a mixture of 2 mM TCEP and 50 mM DTT for roots. Performing IEF in buffers containing hydroxyethyldisulphide significantly enhanced the quality of separation for all proteins except for acidic root proteins, which were optimally focused in the same buffer as extracted. (copyright) 2006 Wiley-VCH Verlag GmbH & Co. KGaA.
55 refs.
English

Publication Type: Journal
Publication Type: Article
Country of Publication: Germany
Classification: 92.1.1.6 BIOCHEMISTRY: Molecular Biology: Proteins
Subfile: Plant Science Code: METHODS.

Wang, C. H., Niu, X. J., and Ren, H. Q. (2006). Distribution and Correlation Analysis of Phosphorus in Lake Sediments. *Journal of Agro-Environment Science [J. Agro-Environ. Sci.]*. 25, 25: 1328-1332. 20 Oct 2006., 1328-1332.
Chem Codes: Descriptors: Article Subject Terms: Aluminium
Descriptors: Aluminum
Descriptors: Calcium
Descriptors: Correlation Analysis
Descriptors: Correlation analysis
Descriptors: Iron
Descriptors: Lake Sediments
Descriptors: Lake deposits
Descriptors: Lakes
Descriptors: Mathematical models
Descriptors: Organic Matter
Descriptors: Organic matter
Descriptors: Organic phosphorus
Descriptors: Phosphorus
Descriptors: Sediment Distribution
Descriptors: Sediment chemistry
Descriptors: Sediments
Descriptors: Temporal variations
Descriptors: organic phosphorus
Descriptors: spatial distribution
Abstract: Distribution and correlation analysis of phosphorus in lake sediments were investigated. In lake sediments, iron phosphorus and calcium phosphorus are the main phosphorus species. The phosphorus species in lake sediments show distinct characters of spatial distribution, but have no obvious temporal variations. The correlation between phosphine and phosphorus suggests that the amount of phosphine(y) in the sediments is related to aluminum bounded phosphorus(x), soluble phosphorus, total phosphorus, iron phosphorus and calcium phosphorus (x). The correlation equation can be described as: y=ax+b, r super(2) greater than or equal to 0.24(n=25). The amount of phosphine has no obvious correlation with organic phosphorus, occluded phosphorus, exchange phosphorus and organic matter in sediments. So, inorganic phosphorus may most probably be the precursor of phosphine, and it thus plays an important role in the formation of phosphine. Phosphorus in lake sediments may be released by phosphine.
English
Publication Type: Journal Article
Environmental Regime: Freshwater
Classification: SW 0850 Lakes
Classification: AQ 00003 Monitoring and Analysis of Water and Wastes
Classification: Q5 01503 Characteristics, behavior and fate
Classification: P 2000 FRESHWATER POLLUTION
Classification: EN 40 Water Pollution: Monitoring, Control & Remediation
Subfile: ASFA 2: Ocean Technology Policy & Non-Living Resources; Pollution Abstracts; ASFA 3: Aquatic Pollution & Environmental Quality; Aqualine Abstracts; Water Resources Abstracts Code: FATE.

Waterford, C. J. and Winks, R. G (1986). Loss rates of phosphine associated with various materials used in laboratory fumigation apparatus. *J. Stored Prod. Res.* 22: 25-7.
Chem Codes: Relative loss rates of PH_3 assocd. with the use of PVC [9002-86-2], nylon, Teflon [9002-84-0], silicone rubber and stainless steel [12597-68-1] were detd. from tubing of these materials mounted in a small glass chamber. The order of the loss rates was glass < stainless steel < Teflon < nylon < PVC <

silicone rubber. Sorption accounted for most of the loss of all materials except silicone rubber and was greatest on PVC. Permeation of PH3 through silicone rubber tubing was excessive and rendered this material unsuitable for use. [on SciFinder (R)] JSTPAR 0022-474X Copyright: Copyright (C) 2010 ACS on SciFinder (R))
Database: CAPLUS
Accession Number: AN 1986:181595
Chemical Abstracts Number: CAN 104:181595
Section Code: 5-1
Section Title: Agrochemical Bioregulators
Document Type: Journal
Language: written in English.
Index Terms: Pipes and Tubes   (phosphine loss assocd. with various materials of, in fumigation app.); Fumigation   (phosphine loss assocd. with various materials used in app. for); Rubber Role: BIOL (Biological study)   (phosphine losses assocd. with use of, in fumigation app.); Polyamides Role: BIOL (Biological study)   (phosphine losses assocd. with use of, in insect fumigation app.)
CAS Registry Numbers: 7803-51-2 Role: BIOL (Biological study)   (fumigation studies with, lab. app. for); 9002-84-0; 9002-86-2; 12597-68-1 Role: BIOL (Biological study)   (phosphine losses assocd. with use of, in fumigation app.) phosphine/ loss/ tubing/ material;/ fumigation/ app/ phosphine Code: FATE.

Waters, S. B., Devesa, V., Del Razo, L. M., Styblo, M., and Thomas, D. J. (Endogenous Reductants Support the Catalytic Function of Recombinant Rat Cyt19, an Arsenic Methyltransferase. *Chem res toxicol. 2004, mar; 17(3):404-9. [Chemical research in toxicology]: Chem Res Toxicol.*
Chem Codes: ABSTRACT: The postulated scheme for the metabolism of inorganic As involves alternating steps of oxidative methylation and of reduction of As from the pentavalent to the trivalent oxidation state, producing methylated compounds containing AsIII that are highly reactive and toxic. S-Adenosyl-L-methionine:AsIII methyltransferase purified from rat liver catalyzes production of methyl and dimethyl arsenicals from inorganic As. This protein is encoded by the cyt19 gene orthologous with cyt19 genes in mouse and human. The reductants dithiothreitol or tris(2-carboxylethyl)phosphine support catalysis by recombinant rat cyt19 (rrcyt19). Coupled systems containing an endogenous reductant (thioredoxin/thioredoxin reductase/NADPH, glutaredoxin/glutathione/glutathione reductase/NADPH, or lipoic acid/thioredoxin reductase/NADPH) support inorganic As methylation by rrcyt19. Although glutathione alone does not support rrcyt19's catalytic function, its addition to reaction mixtures containing other reductants increases the rate of As methylation. Aurothioglucose, an inhibitor of thioredoxin reductase, reduces the rate of As methylation by rrcyt19 in thioredoxin-supported reactions. Addition of guinea pig liver cytosol, a poor source of endogenous As methyltransferase activity, to reaction mixtures containing rrcyt19 shows that endogenous reductants in cytosol support the enzyme's activity. Methylated compounds containing either AsIII or AsV are detected in reaction mixtures containing rrcyt19, suggesting that cycling of As between oxidation states is a component of the pathway producing methylated arsenicals. This enzyme may use endogenous reductants to reduce pentavalent arsenicals to trivalency as a prerequisite for utilization as substrates for methylation reactions. Thus, cyt19 appears to possess both AsIII methyltransferase and AsV reductase activities.
MESH HEADINGS: Animals
MESH HEADINGS: Arsenic/*metabolism
MESH HEADINGS: Cloning, Molecular
MESH HEADINGS: Cytosol/enzymology
MESH HEADINGS: Dithiothreitol/metabolism
MESH HEADINGS: Methylation
MESH HEADINGS: Methyltransferases/*metabolism
MESH HEADINGS: *Oxidation-Reduction
MESH HEADINGS: Phosphines/metabolism
MESH HEADINGS: Rats
MESH HEADINGS: Recombinant Proteins/*metabolism
MESH HEADINGS: Reducing Agents/*metabolism
MESH HEADINGS: Thioredoxin-Disulfide Reductase/metabolism Code: IN VITRO.

World Health, O. R. G. A. (1973). Safe Use of Pesticides. Twentieth Report of the Who Expert Committee on

Insecticides; World Health Organization Technical Report Series. *VNO 513, World Health Organization, Geneva Switzerland* 55 p.
Code: REFS CHECKED/REVIEW.

World Health, O. R. G. A. (1973). Safe Use of Pesticides. Twentieth Report of The WHO Expert Committee on Insecticides; World Health Organization Technical Report Series. *VNO 513, World Health Organization, Geneva Switzerland* 55 p.
Chem Codes: Chemical of Concern: ANTU,AZM,As,AsTO,CBL,CPY,CuS,DDT,DDVP,FNT,FNTH,Hg,MLN,NSH,NaFA,PCP,PPX,RSG,STCH,Sn,TBT,TMMC,TMP,Tl,ZnP Code: REFS CHECKED,REVIEW.

On Order: Potentially Acceptable but Publication has not yet been Received

Al-Hakkak, Z. S. (1989). Mutagenicity of Phosphine Gas in Drosophila melanogaster. *J. Biol. Sci. Res.* 19: 739-745.

Chemical of Concern: MgP,PPHN,ZnP; Habitat: T

Bond, E. J. and Morse, P. M. (1982). Joint Action of Methyl Bromide and Phosphine on Tribolium castaneum (Herbst) (Coleoptera: Tenebrionidae). *J. Stored Prod. Res.* 8: 83-94.

Chemical of Concern: MgP,PPHN,ZnP; Habitat: T

El-Lakwah, F. A., Darwish, A. A., Khattab, M. M., and Abdel-Latif, A. M. (1996). Development of Resistance to Carbon Dioxide and Phosphine in the Red Flour Beetle (Tribolium Castaneum, Herbst). *Ann. Agric. Sci., Mostohor* 34: 1907-1923.

Chemical of Concern: MgP,PPHN,ZnP; Habitat: T

El-Lakwah, F. A., Khattab, M. M., Rady, G. H., and Halawa, Z. A. (1995). Selection of the Cowpea Beetle Callosobruchus Maculatus (Fab.) for Resistance to Phosphine, Carbon Dioxide and Their Mixture in the Laboratory and Biological Observations on the Resistant Strains. *Ann. Agric. Sci., Mostohor* 33: 843-863.

Chemical of Concern: MgP,PPHN,ZnP; Habitat: T

Hayne, D. W. (1951). Zinc Phosphide: Its Toxicity to Pheasants and Effect of Weathering Upon its Toxicity to Mice. *Mich. Agric. Exp. Stn. Q. Bull.* 33: 412-425.

Chemical of Concern: ZnP; Habitat: T

Target: Toxicity of Chemical on Intended Pest

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Chemical of Concern: BDF,ZnP; Habitat: T; Effect Codes: POP; Code: TARGET (BDF,ZnP).

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Chemical of Concern: Zn,ZnP; Habitat: T; Code: OK (Zn), TARGET (ZnP).

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EcoReference No.: 150402
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Chemical of Concern: ZnP; Habitat: T; Code: TARGET(ZnP).

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