

**CALIFORNIA ENVIRONMENTAL PROTECTION AGENCY
DEPARTMENT OF PESTICIDE REGULATION
MEDICAL TOXICOLOGY BRANCH**

**SUMMARY OF TOXICOLOGY DATA
ALUMINUM PHOSPHIDE**

Chemical Code # 484 Tolerance # 225

SB 950 # 005

September 30, 1986

Revised: 5/29/87, 2/21/01

I. DATA GAP STATUS

Chronic toxicity, rat: Data not required at this time

Chronic toxicity, dog: Data not required at this time

Oncogenicity, rat: Data not required at this time

Oncogenicity, mouse: Data not required at this time

Reproduction, rat: Data not required at this time

Teratology, rat: Data not required at this time

Teratology, rabbit: Data not required at this time

Gene mutation: Data not required at this time

Chromosome effects: Data not required at this time

DNA damage: Data not required at this time

Neurotoxicity: Data not required at this time

Toxicology one-liners are attached.

Note: Magnesium phosphide (Chemical Code 2085) is grouped with aluminum phosphide for purposes of DPR toxicity data review. There are no studies under Chemical Code 2085 relevant to this Summary (Aldous, 2/20/01). Phosphine (hydrogen phosphide) gas is readily liberated by magnesium phosphide or aluminum phosphide in the presence of water. Phosphine is separately registered under Chemical Code 3541 (Tolerance Number 51882). Aldous, 2/20/01.

All record numbers through 045180 were examined (Document No. 225-022), plus many older studies with record numbers >900000. This includes all records indexed by DPR as of 2/20/01.

In the one-liners below:

** indicates an acceptable study.

Bold face indicates a possible adverse effect.

File name: t20010221

Revised by Aldous, 2/21/01

These pages contain summaries only. Individual worksheets may contain additional effects.

COMBINED, RAT

No study submitted

CHRONIC TOXICITY, RAT

225-013, -024, -027 938675 (5/13/71 Inst. für Ind. Biol. Forschung-Publication). Aluminum Phosphide (phosphine, aluminum hydroxide, purity unknown); tested at 0, 0.996 mg/kg; no adverse effect reported, incomplete; unacceptable; not upgradeable (one dose, dose too low, no individual animal data). J. Christopher 3/4/85.

CHRONIC TOXICITY, DOG

No study submitted

ONCOGENICITY, RAT

No study submitted

ONCOGENICITY, MOUSE

No study submitted

REPRODUCTION, RAT

No study submitted

TERATOLOGY, RAT

No study submitted

TERATOLOGY, RABBIT

No study submitted

GENE MUTATION

225-030 043727 (Nomura Research Institute, 6/30/82) 842-Muta-GNMU-Bacteria; Ames Assay with Salmonella strains TA1535, TA100, TA1537, TA1538, TA98; E. coli WP2 strain; Aluminum Phosphide (actually tested compound was hydrogen phosphide [PH₃] released from magnesium phosphide [89% Mg₃P₂ and 11% edible paraffin]); 0, 640, 1280, 2560, 6400, 12800, 25600 ppm (nominal concentrations) with and without rat liver S9 activation; no adverse effect; incomplete; unacceptable; not upgradeable (no repeated trials, insufficient cytotoxicity data). W.

N. Choy, 9/23/86.

CHROMOSOME EFFECTS

No study submitted

DNA DAMAGE

No study submitted

MISCELLANEOUS STUDY TYPES

(subacute/subchronic studies or summaries of older data – not applicable toward filling data requirements)

225-013 938676 Klimmer, O. R., "Contribution to the study of the action of phosphine (PH₃): the question of the so-called chronic phosphine poisoning," reprinted from Archiv für Toxikologie 24:164-187 (1969). Phosphine nominal concentrations were created by addition of KOH solution to phosphonium iodide. Study duration of the 1 ppm and 2.5 ppm inhalation exposures was 24 weeks (6 hr/day, 5 days per week on weekdays, plus 4 hr/day on Saturdays). Test animals were 4 female cats and 10 male Wistar rats per dose (both levels). In addition, the 2.5 ppm tests included 4 female guinea pigs. The only apparent treatment effects were slight diffuse fatty infiltration in livers of cats, and slight cloudy swelling in tubular epithelia of rats (p. 8). Testing was also undertaken at 5 ppm in all three species, however survival was limited to a few days in all cases. This investigators concluded that 2.5 ppm exposures might have been extended indefinitely without additional toxic signs. Study is not acceptable to fill data requirements. No DPR worksheet. Aldous, 2/21/01.

225-004 938667 (reprint of 225-013 938676, above).

225-022 938670 Primarily summary tables of old animal studies, largely acute or subacute, and associated time of death.

225-004; 938668; Acute Inhalation; 813; rat; "Acute and Subchronic Inhalation Toxicities of Phosphine, Phenylphosphine and Triphenylphosphine", Waritz, R. S. and Brown, R. M.; Haskell Laboratory, E. I. du Pont de Nemours and Company, Wilmington, DE; published in American Industrial Hygiene Association Journal, 36(6), 452-458 (1975); Phosphine gas (from commercially available compressed gas cylinder, purity not reported); exposure concentrations were not reported but were determined analytically after collecting samples in H₂SO₄; 6 males/dose level; 4-hour, whole-body exposure in 18 l glass chamber, presumably dynamic conditions; mortality rates were not reported; Clinical Observations- red ears, salivation, lacrimation, face pawing, dyspnea; Necropsy- no compound-related abnormalities; reported LC50 (M) = 11 ppm (approx. 0.015 mg/l); Supplemental. (Duncan, 5/19/95)

Other records captured in a library database search for SB-950 mandated studies, but which contain no reviewable data:

225-025 4033

225-024 27199

225-027 35814

225-026 40348

225-030 43727

225-022 45180

225-004 938665

225-004 938666

NOTE: EPA has concluded that the decomposition products of phosphine are toxicologically insignificant at the levels found in the treated commodities and has waived the requirements for additional residue data and for chronic toxicity data. The same rationale which supports waiving chronic toxicity data also supports waiving metabolism and storage stability data. (EPA Guidance for the Reregistration of Pesticide Products Containing Aluminum Phosphide, February, 1986, An Amendment to the Registration Standard issued in October, 1981, pg. 10) [SB# 950-005, Tolerance # 225, Document # 43729] [Note by W. N. Choy, from 1987 Summary].