

Briefing Document: Burrowing Vertebrate Pest Fumigation in California

Source: Based on the *Burrowing Vertebrate Pest Fumigation Study Manual*, California Department of Pesticide Regulation (July 2023).

1. Overview

Definition: A high-risk, non-soil fumigation method targeting burrowing vertebrates.

Audience: Certified Private Applicators pursuing the *Burrowing Vertebrate Pest Fumigation (BVPF)* Certification.

Requirement: PAC alone isn't enough—BVPF certification is required to use restricted fumigants on agricultural land.

2. Fumigants and Hazards

2.1 Aluminum & Magnesium Phosphide

- **Form:** Tablets (aluminum), pellets/plates (magnesium).
- **Gas Produced:** Phosphine (PH_3).
- **Activation:** Moisture and heat speed up release.
- **Residue:** “Green dust” (partially reacted), “gray-white” (spent).
- **Flammability:** Highly flammable, reacts with copper and metallic salts.
- **Odor:** Usually odorless. Do NOT rely on smell for detection.

2.2 Exposure Risks

- **Routes:** Inhalation is most dangerous.
- **Symptoms:**
 - *Mild:* Fatigue, cough, nausea.
 - *Moderate:* Vomiting, difficulty breathing.
 - *Severe:* Organ failure, unconsciousness, death.
- **Common Causes:** Improper PPE, poor monitoring, failure to follow labels.

2.3 First Aid

- **Immediate Action:** Medical attention for *any* symptoms or exposure.
 - **Transport:** Roll down car windows due to off-gassing.
 - **Prep for Doctors:** Provide EPA Reg. #, trade name, a.i., SDS.
 - **Emergency Numbers:** Post Poison Control and manufacturer contacts.
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3. Legal Requirements in California

3.1 Permits

- **Restricted Use:** Both phosphides require a restricted materials permit.
- **Apply via:** Local County Agricultural Commissioner (CAC).
- **NOI Required:** Must notify CAC 24+ hours before fumigation.

3.2 Recordkeeping

- **Mandatory:** Pesticide Use Reports (PURs), tracking date, type, location.
- **Format:** Per-application or monthly summaries.

4. Labeling & Handling

4.1 Label Musts

- **Signal Word:** DANGER/POISON (skull + crossbones).
- **Content:** First aid, PPE, dosage, notification, posting instructions.
- **Posting Requirements:**
 - Signs must say: "DANGER/PELIGRO – DO NOT ENTER"
 - Include: Product name, EPA number, 24-hr emergency contact, applicator info.

4.2 Storage & Transport

- **Storage:** Dry, ventilated, locked. Use NFPA placards.
- **Transport:** Subject to DOT hazardous material rules.
- **Spills:** Never use water. Use SCBA if gas level is unknown.

5. Personal Protective Equipment (PPE)

5.1 Requirements

- **Employer Duties:** Provide, maintain, and store PPE correctly.
- **Gloves:** Only dry, breathable material (e.g., cotton). No waterproof gloves.
- **Clothing:** Aerate before washing. Leather gloves = 12+ hrs aeration.

5.2 Exceptions

- **Eye protection & coveralls:** Not required for solid fumigant applications in burrows (CA rule).

5.3 Respirators

- **Required When:**
 - 15 ppm: SCBA
 - 0.3–15 ppm: Full-face canister respirator
 - <0.3 ppm: No respirator
 - **Program:** Written plan, medical evals, annual fit tests, no facial hair.
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6. Fumigation Planning

6.1 IPM Principles

- **Always assess:** Use fumigation as last resort in an IPM approach.
- **Alternatives:** Trapping, cultural/physical methods, habitat removal.
- **Coordination:** Group efforts = better long-term success.

6.2 Pros & Cons

- **Pros:** Fast, low residual, little secondary toxicity.
 - **Cons:** Expensive, non-target risks, short-lived, skill-intensive.
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7. Site Assessment & Application

Pre-Fumigation Steps

- Inspect burrows for activity (scat, soil disturbance).
 - Confirm target species (size/shape of burrow, presence).
 - Check soil moisture (must be adequate).
 - Avoid dormancy periods (e.g., gopher estivation).
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8. Target Pests – Key Identification Points

Pest	Burrow Type	Key ID Notes
Ground Squirrels	Open system	4–6" entrance, social, plug during dormancy
Pocket Gophers	Closed system	2.5–3.5", crescent mound
Voles	Open with runways	1.5–2", very high reproduction
Moles	Closed, volcano mounds	No visible holes, plant uprooting
Norway Rats	Open system	2–4", near buildings
Roof Rats	High nesting	Rarely burrow
Deer Mice	Small tunnels	~2.5 cm holes
Chipmunks	Open system	Not labeled for fumigant use in CA

Summary

Proper training, permitting, PPE, planning, and adherence to label laws are essential when fumigating burrowing vertebrate pests in California. Missteps are not only dangerous — they're illegal.