

First Responders Information

Paladin® (Dimethyl disulfide)



What is Paladin® Soil Fumigant?

Paladin® Soil Fumigant (Dimethyl disulfide or DMDS) is a Restricted Use Pesticide due to inhalation exposure. For sale to and use only by Certified Applicators or persons under their direct supervision and only for those uses covered by the Certified Applicator's certification.

Paladin® is a broad-spectrum fumigant used for the control or suppression of nematodes, various soil-borne plant diseases and weeds.

Paladin® will be applied to fields where tomatoes, peppers, eggplants, cucurbit crops, strawberries, blueberries, ornamentals and forestry nursery crops will be produced.

Certain crops such as onions, garlic, radishes, cabbage, broccoli, etc. produce DMDS. DMDS has a short persistence in the environment and no ozone depletion potential.

DMDS has a distinctive, garlic-like odor (one of its other uses is as a registered food additive providing a garlic odor and flavor). Because of this distinctive odor of DMDS and related sulfur compounds, they are often added to natural gas and propane as an odorant to warn of leaks and protect people. The sulfur odor from DMDS can be mistaken for a gas leak. Key distinctions between DMDS odor and a gas leak are:

- A gas leak odor will grow stronger near the source. DMDS odor will be diffuse.
- A gas leak indoors will have a stronger odor indoors than outdoors. DMDS should have a stronger odor outdoors.
- DMDS is heavier than air and will follow geographical depressions; Natural gas is lighter than air (**propane is heavier than air**).
- In a gas leak, you can smell only the gas odorant, which makes up a very small part of the gas. A gas leak will register on a PID organic vapor meter. DMDS will only register on special meters sensitive into the part per billion range.

There are two Paladin® products: Paladin® and Paladin® EC. Paladin® is applied by shank (injected directly into the soil) while Paladin® EC is applied via drip fumigation. This information applies to both products.

Buffer Zones – protection for the community

Buffer zones have been determined for DMDS to protect the community.

There can be no occupied buildings within the buffer zone and entry into the buffer zone is restricted. Vehicular and bicycle traffic on public and private roadways through the buffer zone is permitted.

Paladin® may not be applied within 1/4 mile of nursing homes, hospitals, licensed schools, licensed day care facilities, licensed assisted living facilities (licensed by State or local governments) or prisons that will be occupied during the buffer zone period.

Buffer zone perimeters must be clearly posted or otherwise controlled to restrict entry.

Buffer zones remain in effect for 48 hours following the completion of a fumigation treatment.

Incidental releases of Paladin® outside the buffer zone may occur due to variations in weather conditions and geography.

Early signs & symptoms of exposure

DMDS has a strong, objectionable odor which can be detected at concentrations significantly below the levels that can potentially cause harm. The odor of DMDS may cause nausea, headache, drowsiness or dizziness.

The odor threshold for DMDS is about 7 parts per billion (ppb). The Human Equivalent Concentration (HEC) for the no observed adverse effects level is 1.65 parts per million. The US EPA level of concern is 55 ppb.

At concentrations significantly greater than its odor threshold, Paladin® may cause nasal irritation. Exposure to liquid DMDS may also cause skin irritation.

Based on toxicology studies, DMDS is no more than slightly toxic and slightly irritating when applied to the skin. It is practically nontoxic if inhaled and slightly to moderately irritating to the respiratory tract and the eyes. It is considered moderately toxic if swallowed. DMDS is not a skin sensitizer or known to cause allergic responses. It is not mutagenic or a suspected carcinogen. It is not a developmental or reproductive toxicant.

PALADIN®

If there is an incident that results in uncontrolled release of DMDS, exposure to the liquid, vapor, or mist may cause symptoms of eye irritation and/or irritation of the respiratory tract. Prolonged or repeated skin contact may cause dermatitis, redness, rash, possibly severe irritation, scabs, (severity of effects depends on extent of exposure).

Appropriate steps to take to mitigate exposures

Paladin® vapor is heavier than air and as a result of gravity will tend to flow into geographic depressions during atmospheric inversions. If people are in a depressed area near a recent Paladin® application and detect a pronounced garlic-like odor, move them uphill and away from the fumigated field to reduce exposure.

Odor should dissipate once the atmospheric conditions resolve. Residues of Paladin® do not remain on surfaces. When odor is no longer detected, it is safe to return to the area.

For more information and non-emergency contact

For more information, see <http://www.paladin.com> or refer to the product MSDS and label.

EMERGENCY TELEPHONE NUMBERS

Paladin Hotline: 800.286.4110

FOR MEDICAL EMERGENCIES

Rocky Mountain Poison Control Center: 866.767.5089

FOR SPILLS OR TRANSPORTATION EMERGENCIES

Chemtrec: 800.424.9300

What to do in case of exposure – First Aid

IF SWALLOWED

- Call a poison control center or doctor immediately for treatment advice.
- Have person sip a glass of water if able to swallow.
- Do not induce vomiting unless told to do so by a poison control center or doctor.
- Do not give anything by mouth to an unconscious person.

IF INHALED

- Move person to fresh air.
- If person is not breathing, call 911 or an ambulance, then give artificial respiration, preferably mouth-to-mouth if possible.
- Call a poison control center or doctor for treatment advice.

IF ON SKIN OR CLOTHING

- Take off contaminated clothing.
- Rinse skin immediately with plenty of water for 15–20 minutes.
- Call a poison control center or doctor for treatment advice.

IF IN EYES

- Hold eye open and rinse slowly and gently with water for 15–20 minutes. Remove contact lenses, if present, after the first 5 minutes, then continue rinsing.
- Call a poison control center or doctor for treatment advice.

Have this document with you when calling a poison control center or doctor or going for treatment.