



1. COMPANY DETAILS:

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2. PRODUCT IDENTIFICATION:

Trade Name: Carbakil
Formulation: Dusting Powder
Chemical Name: Carbaryl
IUPAC Name: 1-naphthyl methylcarbamate
Chemical Family: Carbamates
Chemical Formula: $C_{12}H_{11}NO_2$
UN No.: 2757
Description of product: A residual contact and stomach poison for the control of insects on various crops as listed on the label. Also contact remedy for the control of red mites, tampans and lice on poultry, and cage birds and in poultry houses. Will also control ticks and fleas on dogs and cats.

3. COMPOSITION:

Hazardous Components: Carbaryl 5% m/m
Symbols: Xn, N
Risk-phrases: R22, R36/37, R40, R50

4. PHYSICAL AND CHEMICAL CHARACTERISTICS:

Appearance: Pink powder
Odour: Odourless
Flammability: Not flammable
Boiling Point: N/A
Vapour Pressure: (mmHg) negligible
Percent Volatile: N/A
Explosive properties: Like most organic powders, under severe dusting conditions, this dust can form explosive mixtures in air.
Oxidizing properties: Not oxidative

5. STABILITY AND REACTIVITY DATA:

Stability:	Stable for two years under normal conditions of use.
Hazardous decomposition products:	Emits acrid smoke and fumes when heated to decomposition including oxides of nitrogen and carbon monoxide.
Incompatibilities:	Strong alkalis, acids, nitrates and oxidizing agents.

6. EXPOSURE CONTROL MEASURES:

Respiratory:	Approved NIOSH/MESA air purifying respirator with a pesticide canister which provides suitable protection from dusts and mists.
Ventilation:	It is essential to provide adequate ventilation. The measures appropriate for a particular worksite depend on how this material is used and on the extent of exposure. Ensure that control systems are properly designed and maintained. Comply with occupational safety, environmental, fire, and other applicable regulations.
Clothing:	Wear appropriate protective clothing and equipment to prevent repeated or prolonged skin contact with the substance.
Gloves:	Wear appropriate synthetic protective gloves to prevent contact with this substance.
Eye protection:	Goggles or safety glasses with side shields. Other protective equipment: Clean long sleeved body covering work clothing, hat, shoes and socks. Eye wash and cleaning facility

7. HAZARD IDENTIFICATION:

Main Hazard:

Toxic to fish and bees.

Carbaryl is a carbamate compound, which inhibits cholinesterase. It is toxic. Contact with skin, inhalation of dust or spray, or swallowing may be fatal.

Fire and explosion hazard:

Slight fire hazard when exposed to heat or flame. Dust-air mixtures may ignite or explode.

Biological Hazard:

Likely routes of exposure: May be absorbed from the gastrointestinal tract, through the intact skin, and through inhalation of fine dust.

Eye contact:

The product is minimally toxic, however caution should be practiced when handling the product. The talc in the product can be irritating to eyes.

Skin contact:

The product is minimally toxic, however caution should be practiced when handling the product.

Carbaryl and Talc is non-irritating.

Ingestion:

Toxic by ingestion.

Inhalation:

Toxic by inhalation. The carrier, talc, in the formulation can be irritating to the respiratory system.

8. SYMPTOMS OF POISONING:

Proper care should be taken during occupational use to avoid any inhalation of dust particles, and to prevent accidental contamination of food products and water. Acute aspiration of talc, the carrier in Carbakil, causes cough, dyspnea, tachypnea, sneezing, vomiting, cyanosis, and

pulmonary edema which may be delayed up to several hours. Cardiorespiratory arrest may occur following severe aspiration.

Inhalation:

When inhaled, the first effects of cholinesterase inhibition are usually respiratory and may include nasal hyperaemia and watery discharge, chest discomfort, dyspnea, and wheezing due to increased bronchial secretions and bronchoconstriction.

Other systemic effects may begin within a few minutes or several hours of exposure. Symptoms may include nausea, vomiting, diarrhoea, abdominal cramps, headache, vertigo, ocular pain, ciliary muscle spasm, blurring or dimness of vision, miosis, or in some cases mydriasis, lacrimation, salivation, sweating, and confusion. In non-fatal cases, the illness generally lasts less than 24 hours.

Skin contact:

Carbakil may cause irritation. Localized sweating and fasciculations may occur at the site of contact. If sufficient amounts are absorbed through the skin, other effects of cholinesterase inhibition may occur as described in acute inhalation. Symptoms may be delayed for 2-3 hours, usually no more than 8 hours.

Eye contact:

Direct contact may cause pain, hyperaemia, lacrimation, twitching of the eyelids, miosis, and ciliary muscle spasm with loss of accommodation, blurred or dimmed vision and browache. Sometimes mydriasis may occur instead of miosis. With sufficient exposure, other symptoms of cholinesterase inhibition may occur as described in acute inhalation.

Ingestion:

When ingested, the first effects may be nausea, vomiting, anorexia, abdominal cramps, and diarrhea. With absorption from the gastrointestinal tract, the other effects of cholinesterase inhibition as described in acute inhalation may occur. Symptoms may begin within minutes or be delayed several hours.

9. FIRST AID MEASURES:

Inhalation:

Remove from exposure area to fresh air immediately. If breathing has stopped, give mechanical artificial respiration (not direct mouth-to-mouth). Maintain airway and blood pressure and administer oxygen if available. Keep affected person warm and at rest. Treat symptomatically and supportively. Qualified personnel should perform administration of oxygen. Get medical attention immediately.

Skin:

Remove contaminated clothing immediately. Wash contaminated areas with soap and water followed by alcohol. Emergency personnel should wear gloves and avoid contamination. Treat respiratory difficulty with mechanical artificial respiration. Get medical attention immediately.

Eye:

Irrigate eyes with water or saline solution. If symptoms of poisoning occur, treat respiratory difficulty with mechanical artificial respiration and oxygen. Observe patient for at least 24-36 hours. Get medical attention immediately. Qualified medical personnel should administer oxygen.

Ingestion:

If person is alert and respiration is not depressed, give syrup of Ipecac followed by water (if vomiting occurs, keep head below hips to prevent aspiration). If consciousness level declines or vomiting has not occurred in 15 minutes empty stomach by gastric lavage with the aid of cuffed endotracheal tube using isotonic saline or 5 % sodium bicarbonate follow with activated charcoal. Establish and maintain airway. Treat respiratory difficulty with artificial respiration and oxygen.

Do not give morphine, aminophylline, phenothiazines, reserpine, furosemide, or ethacrynic acid. Drugs like 2 PAM are not effective in poisoning with Carbaryl AND SHOULD NOT BE USED.

Treat symptomatically and supportively. Qualified medical personnel must perform administration of oxygen and gastric lavage. Get medical attention immediately.

10. NOTE TO PHYSICIAN:

Antidote:

The following antidote has been recommended: **Atropine**. However, the decision as to whether the severity of poisoning requires administration of any antidote and actual dose required should be made by qualified medical personnel. *For cholinesterase inhibitors:* Establish clear airway and tissue oxygenation by aspiration of secretions, and if necessary, by assisted pulmonary ventilation with oxygen. Improve tissue oxygenation as much as possible before administering atropine to minimize the risk of ventricular fibrillation. Administer atropine sulphate intravenously, or intramuscularly if iv injection is not possible. In moderately severe poisoning administer atropine sulphate, 0.4-2.0 mg repeated every 15 minutes, until atropinization is achieved (tachycardia, flushing, dry mouth, mydriasis). Maintain atropinization by repeated doses for 2-12 hours, or longer, depending on the severity of poisoning. The appearance of rales in the lung bases, miosis, salivation, nausea, bradycardia, are all indications of inadequate atropinization. Severely poisoned individuals may exhibit remarkable tolerance to atropine.

Two or more times the dosages suggested above may be needed. Persons not poisoned or only slightly poisoned, however, may develop signs of atropine toxicity from such large dosages: fever, muscle fibrillations, and delirium are main signs of atropine toxicity. If these signs appear while the patient is fully atropinized, atropine administration should be discontinued, at least temporarily. Observe treated patients closely at least 24 hours to ensure that symptoms (possibly pulmonary oedema) do not recur as atropinization wears off. In very severe poisonings, metabolic disposition of toxicant may require several hours or days during which atropinization must be maintained.

Markedly lower levels of urinary metabolites indicate that atropine dosage can be tapered off. As dosage is reduced, check the lung bases frequently for rales. If rales are heard or other symptoms return, re-establish atropinization promptly.

11. FIRE FIGHTING MEASURES:

Fire and explosion hazard:

Slight fire hazard when exposed to heat or flame. Dust-air mixtures may ignite or explode.

Extinguishing agents:

Extinguish small fires with carbon dioxide, dry powder, Halon, water spray, or alcohol-resistant foam. Water spray can be used for cooling of unaffected stock, but avoid water coming in contact with the product. Contain water used for firefighting for later disposal.

Fire fighting:

Move containers from fire area if possible. Fight fire from maximum distance. Stay away from storage tank ends. Contain fire control water for later disposal. Do not scatter material, extinguish only if flow can be stopped. Use flooding amounts of water as a fog as solid streams may be ineffective. Cool containers with flooding amounts of water as far a distance as possible. Use water spray to absorb toxic vapours. Avoid breathing toxic vapours. Keep upwind. Consider evacuation of downwind area if material is leaking.

Special Hazards:

Fire may produce irritating or poisonous vapours (carbon monoxide and nitrogen oxides), mists or other products of combustion.

Personal protective equipment:

Carbaryl dust may be transported in the smoke from a fire. Fire fighters and others that may be exposed should wear full protective clothing and self contained breathing apparatus.

12. ACCIDENTAL RELEASE MEASURES:

Personal precautions:

Avoid contact with skin and eyes.

Environmental precautions:

Do not allow entering drains or watercourses. When the product contaminates public waters, inform appropriate authorities immediately in accordance with local regulations.

Occupational spill:

Do not touch spilled material. Stop leak if you can do so without risk. Use water spray to reduce dust (contain any water used). Neutralize with sodium hydroxide and allow standing for 4 hours. For **small spills**, sweep up with sand or other suitable absorbent material, such as sawdust, and place into containers for later disposal. Move containers from spill area. For **larger spills**, contain material far ahead of spill for later disposal. Keep spectators away. Isolate hazard area and deny entry. Ventilate closed spaces before entering.

13. HANDLING / STORAGE AND DISPOSAL CONSIDERATIONS:

Store in a cool place and out of direct sunlight. Store away from flames or sources of heat, strong alkalis, acids, and oxidizing agents. Store apart from seeds, fertilizers, animal and human foodstuffs. Store in original packages as approved by the manufacturer. Keep the containers sealed when not in use.

Pesticide disposal:

Contaminated absorbents, surplus product, etc., should be burned at 1000oC in a high-temperature incinerator with effluent gas scrubbing. Where no incinerator is available, hydrolysis under alkaline conditions (pH 12 or above) is a suitable method to dispose of small quantities of the product. Before disposal of the resultant waste, the material must be analyzed to ensure that the active ingredient has been degraded to a safe level. Never pour untreated waste or surplus products into public sewers or where there is any danger of run-off or seepage into water systems. Comply with local legislation applying to waste disposal.

Package product wastes:

If container is broken, handle with rubber gloves. Emptied containers retain vapour and product residues. Observe all labeled safeguards until container is destroyed. Combustible containers should be disposed of in pesticide incinerators. Non-combustible containers must be punctured and transported to a scrap metal facility for recycling or disposal.

14. TOXICOLOGICAL INFORMATION:

All data is for technical **Carbaryl**, except where mentioned.

Acute oral LD50:

264 mg/kg in male rats.

500 mg/kg in female rats.

710 mg/kg in rabbits

Acute dermal LD50:

> 4000 mg/kg in rats.

> 2000 mg/kg in rabbits.

Although tests indicate high LD50 values, caution should be practiced when handling the product.

Acute inhalation LC50:

> 206.1 mg/l of air over 4 hours (rats).

Acute skin irritation:

Carbaryl was found to be non-irritating to skin (rabbit).

Acute eye irritation:

Carbaryl was found to be non-irritating to eyes (rabbit), but the talc in the formulation, can cause eye irritation.

Dermal sensitization:

No data available.

Carcinogenicity:

Studies did not detect carcinogenic activity. No human information available.

Teratogenicity:

Studies did not detect any teratogenic effects. No human information available.

Mutagenicity:

Studies did not detect any mutagenic effects. No human information available.

15. ECOLOGICAL INFORMATION:

Degradability:

In soil, the active ingredient is metabolized to form 1-naphthol. The half-life of the product is 7-14 days in sandy loam soils and 14-28 days in clay loam. Soils with high organic matter content retain residues for longer periods than do mineral soils.

Mobility:

The product is adsorbed on soil and is unlikely to leach into water sources.

Accumulation:

The product adsorbs to soil but shows little or no tendency to bio-accumulate. **Carbaryl** has very limited persistence in the environment.

ECOTOXICOLOGY:

Birds: Minimally toxic to birds.

Acute oral LD50: > 2179 mg/kg (young mallard ducks)

> 2230 mg/kg (Japanese quail)

> 2000 mg/kg (young pheasants)

1000 - 3000 mg/kg (pigeons)

Fish: Toxic to fish.

LC50 (96 hr): 1.3 mg/l (rainbow trout)

10 mg/l (bluegill sunfish)

2.2 mg/l (sheepshead minnow)

Bees: Toxic to bees.

LD50 (topical): 1 µg/bee.

Daphnia: Very toxic to Daphnia.

Acute toxicity to *Daphnia magna*: EC50 (48h): 0,006 mg /l

16. TRANSPORTATION INFORMATION

UN No.:	2757
Proper shipping name:	Carbamate pesticide
Class:	6.1
Packing group:	III
Packing instructions:	P002 IBC 07
Special provisions:	61 274