



**ENVIRONMENTAL PROTECTION AGENCY REGION 8
WORKER PROTECTION STANDARDS**

**SYMPTOMS OF EXPOSURE
TO PESTICIDE PRODUCTS
USED ON MINOR COLORADO CROPS**

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There is general agreement that prevention of pesticide poisoning remains a much surer path to safety and health than reliance on treatment. Clinical management decisions have to be made promptly and, as often as not, on the basis of limited scientific or medical information. This manual puts together important information about the health effects of pesticides used in Colorado. This information has been compiled from a variety of sources (see pages 37-38) for the use of growers, health care workers, and other interested parties.

THE PESTICIDE LABEL

The pesticide label is your guide to using pesticides safely and effectively. It contains pertinent information that you should read and understand before you use a pesticide product. A pesticide is any substance or mixture of substances designed to prevent, destroy, repel, or mitigate any pest. Pests can be insects, mice and other animals, unwanted plants (weeds), fungi, or microorganisms like bacteria and viruses. Any substance which is sold to control a pest is legally a pesticide and is subject to all state and federal regulations which apply to pesticides. Though often misunderstood to refer only to insecticides, the term **pesticide** also applies to herbicides, fungicides and various other substances used to control pests. Under United States law, a pesticide is also any substance or mixture of substances intended for use as a plant regulator, defoliant, or dessicant. One should carefully read and understand the pesticide label before purchasing the pesticide. The label contains important information about the pesticide's current status, composition and toxicity, as detailed below.

Pesticide name: Every manufacturer has a brand name for its product. Only common names which are officially accepted by the USEPA may be used in the ingredient statement of the pesticide label. The chemical name is the complex name which identifies the chemical components and structure of the pesticide.

Ingredient Statement: All labels must list clearly the active ingredients and the amounts. They must also list the amount of inert (inactive) ingredients. The inert ingredients are added to the formulation of the pesticides to increase solubility, dilute them to the appropriate concentration or for some other reason. The active ingredient is the one which actually controls the pest. Some inert ingredients in current use have adverse human health effects as mentioned below.

Registration number: All pesticides sold in the United States are registered with the Environmental Protection Agency and are issued an EPA registration number. This number must be on the pesticide label.

Establishment number: All pesticide-producing establishments must be registered with the EPA. These establishment numbers must also be on the pesticide label.

Use classification: The EPA classifies pesticides into two broad groups: **General Use and Restricted Use Pesticides (RUP)**. **General Use** pesticides may be purchased and used by anyone. The **Restricted Use** classification restricts the use of a product to certified pesticide applicators, or under the direct supervision of a certified applicator. The **Restricted Use Products (RUP) Report** database is maintained by the Office of Pesticide Programs of the USEPA and is periodically updated. **For current information about federally registered RUP's, contact the nearest EPA office.**

Pesticide toxicity and signal words: Accidental exposure or overexposure to pesticides can have serious effects. The potential for pesticide accidents is real. While most pesticides can be used with relatively little risk (as long as label directions are followed), some are extremely toxic and require special precautions. All pesticides are toxic, they differ only in the degree of toxicity. The toxicity of a pesticide is determined, in part, by laboratory tests on animals such as rats, mice and rabbits. A pesticide product label will have one of three signal words that clearly indicate the degree of acute toxicity associated with the product. **While the effectiveness of the product in pest control depends on the main ingredient, the toxicity is that**

of the entire product, including solvents and additives. These may be an important contributor to the toxicity of the product and are not always listed on the label. The signal words indicate the degree of potential risk to a user, not the effectiveness of the product. The EPA classification system for pesticide toxicity is shown in the table below

TOXICITY CLASS	ACUTE TOXICITY	SIGNAL WORD
I	High	Danger ¹
II	Moderate	Warning
III	Low	Caution
IV	Practically nontoxic	Caution

Acute toxicity of a pesticide refers to the effects of a single exposure or repeated exposure over a short period of time, such as an accident during mixing or applying pesticides. Various signs and symptoms are associated with acute poisonings. A pesticide with high acute toxicity can be deadly even if a small amount is absorbed. This is described as acute oral toxicity, acute dermal toxicity or acute inhalation toxicity.

Chronic toxicity refers to the effects of long term or repeated low level exposure to a toxic substance. The effects of chronic exposure do not appear immediately after first exposure and may take years to produce signs and symptoms. Examples of chronic poisoning may include carcinogenicity, liver damage, nerve damage, reproductive disorders, allergenic sensitization, etc. **The signal words do not refer to chronic toxicity.**

Routes of exposure : Along with the signal words, pesticide labels also include statements about route of entry and specific actions that must be taken to avoid exposure. Route of entry statements indicate the outcome that can be expected from exposure. For example, a pesticide label might read: "*Poisonous if swallowed, inhaled, or absorbed through skin. Rapidly absorbed through the skin and eyes.*" This indicates that the pesticide is a potential hazard through all three routes of entry, and that skin and eye contact are particularly hazardous. Specific action statements normally follow the route of entry statement and indicate what must be done to prevent poisoning accidents. In the case of the pesticide discussed above, the statement might read : "*Do not get in eyes, on skin, or on clothing. Do not breath spray mist.*"

Pesticides can enter the human body three ways:

1. *Dermally*, by absorption through the eyes or skin
2. *Orally*, through the mouth
3. *Inhalation*, by breathing into the lungs

Dermal exposure can result in absorption, after a pesticide contacts skin or eyes. Absorption will continue until the pesticide is fully absorbed. Washing can reduce absorption sometimes.

Oral exposure may result in serious illness, severe injury, or even death, if a pesticide is swallowed.

Pesticides can be ingested by accident, through carelessness, or intentionally. The most common accidental oral exposures occur when pesticides have been removed from their original container. Following these guidelines will help avoid accidents.

¹ If a pesticide meets the criteria of High Toxicity- Class I based on its oral, inhalation , or demal toxicity, the label must also bear the word **Poison** and the skull and crossbones symbol in close proximity.

1. Always store pesticides in their original labeled containers.
2. Never use mouth to clear a spray hose or nozzle, or to begin siphoning a pesticide.
3. Never eat, drink or use tobacco until after leaving the work area and washing thoroughly.

Children under 10 are victims of at least half of the accidental pesticide deaths in the U.S. **It is essential to keep pesticides away from children.** These are some recommended steps to take.

4. Always store or lock up pesticides away from children's reach.
5. Always read the label first, and follow the directions.
6. Never transfer pesticides to other containers that children may mistake for food or drink.
7. Do not use pesticides around kids, toys or pets.
8. Teach children that "pesticides are poisons" - something they should not touch.

Respiratory (inhalation) exposure is particularly hazardous because pesticide particles, airborne droplets or vapors can be rapidly absorbed by the lungs into the bloodstream. Pesticides can cause serious damage to nose, throat and lung tissue if inhaled in sufficient amounts. Handling concentrated wettable powders can pose a hazard if inhaled during mixing. The hazard from inhaling pesticide spray droplets is fairly low when dilute sprays are applied with low pressure application equipment. This is because most droplets are too large to remain airborne long enough to be inhaled. However, when high pressure, ultra low volume (ULV) or fogging equipment is used, the potential for respiratory exposure is increased. The droplets produced during these operations are in the mist-or-fog size range and can be carried on air currents for a considerable distance.

RECOGNIZING COMMON PESTICIDE POISONINGS

All pesticides (main ingredients) in a given chemical group generally affect the human body in the same way; however the severity of the effects vary depending on the formulation, potency, concentration, and route of exposure to the pesticide. In the tables included in this publication (pages 5- 36) we list the common symptoms caused by exposure to the main ingredient, but symptoms caused by additives and decomposition products of certain formulations are also mentioned. Pesticides are listed alphabetically by the name of the main ingredient.

Prompt action after pesticide exposure can prevent serious consequences. Some poisoning signs (i.e. vomiting, sweating, or pinpoint pupils) can sometimes be seen by others. The onset time of signs and symptoms after mild exposures is variable. It is imperative for anyone who works with pesticides to become familiar with these, to allow for prompt and effective treatment and thus prevent serious injury.

Persons who are frequently involved with pesticides should become familiar with these important steps:

1. Recognize the signs and symptoms of pesticide poisoning for those pesticides you commonly use or to which you may be exposed.
2. If you suspect a pesticide poisoning, get immediate help from a local hospital, physician, or the nearest poison control center.
3. In a pesticide emergency, identify the pesticide to which the victim was exposed. Provide this information to medical authorities.
4. Have a copy of the pesticide label present when medical attention begins. The label provides information that will be useful in assisting a pesticide poisoning victim.
5. Know emergency measures you can take until help arrives or the victim can be taken to the hospital. Both first aid and medical treatment procedures are listed on the product label.

WHAT TO DO WHEN PESTICIDE POISONING OCCURS

- 1 Immediately call **911** whenever a pesticide poisoning is suspected. An advanced life support team will be dispatched to provide assistance.
- 2 If the common emergency telephone number is not available in your community, contact: (a) the **Poison Center, 1-800-332-3073** , (b) the nearest hospital, (c) a physician. The Poison Center will be able to provide specific directions on procedures to follow until a life support team arrives. Another source of medical and consumer information related to pesticides during non-emergencies is the **National Pesticide Telecommunications Network** hotline(**1-800-858-7378**)

3. Whenever possible, obtain the following information:
 - A. Has the victim been exposed to a pesticide?.
 - B. If so, which ones and how did the exposure occur?.
 - C. What emergency actions are indicated in the pesticide label?

4. Many labels direct that vomiting be induced. Do not induce vomiting when:
 - A. The label says not to.
 - B. Convulsions have occurred.
 - C. The victim is unconscious.
 - D. The pesticide contains **petroleum products** (such as **xylene.**)

5. Wash the victim's exposed skin with a detergent and plenty of water. Systemic absorption can result from continuous exposure if not treated. If skin exposure occurs, obtain medical treatment. If the victim's clothing has been contaminated by a pesticide that is readily absorbed dermally, remove the clothing and decontaminate the victim's skin.

6. Even though careful pesticide application is the norm, accidents can happen. Be prepared. Keep the number of the poison center readily available either in your telephone directory or near your telephone. Do not hesitate to contact medical authorities if any symptoms of pesticide poisoning occur.

Use all pesticides safely. Read the pesticide label completely and compl with all directions. Failure to do so may subject you to sanctions or penalties provided by federal and/or state laws.

FUNGICIDES USED ON MINOR COLORADO CROPS

MAIN INGREDIENT	PRODUCTS	ACUTE TOXICITY	CROPS WHERE USED	SYMPTOMS
ANILAZINE	DYRENE 50	High - Class I	Cucumbers	Harmful if swallowed. Do not get into eyes or clothing. Causes irreversible eye damage. Can cause irritation of skin with prolonged contact. Product DYRENE is one of the most common causes of pesticide - associated skin disease. Possible effects on lungs, liver and kidneys (animal studies).
BENOMYL	BENLATE 50W	Practically nontoxic-Class IV	Peaches, apples, cucumbers, cantaloupes, beans, cherries, sugar beets	May irritate eyes, nose, throat and skin (mildly). Repeated exposure may cause a temporary allergic skin reaction. Possible effects on liver and testes, birth defects and tumors at high doses (animal studies).
CAPTAN	CAPTAN 50W, 3 DD, 30 DD, 4F, 400, 75, 5%, 7.5 DUST, 65, 300, 3000, 4000; ORTHOCIDE 50	High - Class I, Moderate - Class II and Low - Class III (*)	Cabbage, peaches, onions, potatoes, carrots, sugar beets, beans, spinach, sweet corn, cucumbers, cantaloupes, lettuce, cherries	Corrosive; can cause irreversible eye damage if not removed promptly. Prolonged or repeated skin contact may cause irritation, redness and swelling, and allergic skin reactions. May be harmful if swallowed or inhaled; ingestion in large quantities can cause vomiting and diarrhea. Causes tumors in lab. animals.
CAPTAN + LINDANE	CAPTAN - LINDANE 7.5-0.5	Low - Class III	Cantaloupes, cabbage, cucumbers, carrots	This product contains 7.5% CAPTAN and 0.5% LINDANE. Avoid contact with skin, eyes and clothing, or breathing dust. For more information about health effects of CAPTAN, see above. LINDANE is a moderately toxic insecticide, and symptoms of acute exposure include headache, nausea, vomiting, dizziness, tremors, diarrhea, weakness, etc.
CAPTAN + METHOXYCHLOR	CAPTAN 75 + METHOXYCHLOR	High - Class I	Cantaloupes, cabbage, cucumbers	This product contains 72% CAPTAN and 5% METHOXYCHLOR. Do not get in eyes: causes irreversible eye damage. Harmful if swallowed or inhaled. May cause allergic skin reactions. For health effects of CAPTAN, see above. METHOXYCHLOR is an insecticide, and a slight skin irritant. Heavy exposure may cause fatigue, and liver and kidney damage.

CAPTAN + DIAZINON+ LINDANE	AGROX 3-WAY	Low - Class III	Beans, cabbage	May be harmful if swallowed or absorbed through the skin. Avoid breathing dust or spray mist. Avoid contact with skin, eyes and clothing.
CAPTAN + PCNB + THIABENDAZOLE	RIVAL	High - Class I	Beans	Causes irreversible eye damage. Harmful if swallowed. May cause allergic skin reactions.
CARBOXIN	VITAVAX 34, POUR-ON	Low - Class III	Beans, sweet corn	Moderately toxic if swallowed; eye irritant by contact; mildly irritating to nose and throat. May cause skin irritation and allergic skin reactions on prolonged exposure. Symptoms of poisoning can include vomiting and headache, but recovery is rapid after quick treatment. Possible effects on liver and kidneys (animal studies) .
CHLOROPICRIN	VORLEX 201; TELONE C17 (see later in this table)	High - Class I-RUP	Cabbage, onions, potatoes, carrots, sugar beets, beans, spinach, sweet corn, cucumbers, cantaloupes, lettuce	CHLOROPICRIN is a component in both products. May cause severe eye irritation and corneal injury. Prolonged skin exposure may cause burns. Symptoms of severe exposure are nausea and/or vomiting and central nervous system effects. In animals, systemic effects reported on the bladder, kidneys, liver, lungs, stomach and upper respiratory tract. Ingestion may cause gastro-intestinal irritation and ulceration. Excessive exposure to vapors may cause severe irritation to upper respiratory tract and lungs.
CHLORONEB	CHLORONEB 65; NU-FLOW D	Moderate - Class II and Low - Class III	Sugar beets, beans	Causes severe eye and skin irritation. Do not get into eyes , skin or clothing. Harmful if swallowed. Avoid contamination of food.
CHLOROTHALONIL	BRAVO 90DF, 90DG, 500F, DF, S, 720F, 720, WEATHER STICK, + ZN, ULTREX; ENSIGN 720 ; AGRONIL 500, 720; CHLOROTHALONIL 4L; MANICURE T/O; TERRANIL 6L, +CU, +S, +ZN; ORTHOCIDE 50	High- Class I, Moderate-Class II and Low Class III (*)	Cabbage, peaches, onions, potatoes, carrots, beans, sweet corn, cucumbers, cantaloupes, cherries	If swallowed, may cause gastric irritation ;if inhaled, may irritate the respiratory tract and aggravate preexisting respiratory condition. Eye contact and overexposure may cause eye irritation and temporary eye injury. Skin absorption may cause mild irritation; prolonged contact may aggravate preexisting skin conditions and cause skin allergy. CHLOROTHALONIL can cause cancer (animal tests).
COPPER AMMONIUM CARBONATE	COPPER- COUNT-N	Low - Class III	Cabbage, onions, carrots, beans, spinach, cucumbers, cantaloupes	Causes eye and skin irritation. Harmful if swallowed, absorbed through skin or inhaled. May cause skin sensitization in certain individuals.

COPPER HYDROXIDE	KOCIDE 101, 101DF 404S,200,4.5L, 4.5LF, LF, DF, 2000, 606; BASIC STOP DF; BAC- STOP; CHAMP; COPPER FLOWABLE; KOP-HYDROXIDE 50; NU-COP 3L, 50DF	High - Class I, Moderate - Class II and Low - Class III (*)	Cabbage, peaches, onions, potatoes, carrots, apples, sugar beets, beans, cucumbers, cantaloupes, lettuce, cherries, pears	For Class I products, direct contact with eyes may seriously damage tissue; class III products can cause mild eye irritation. Slightly toxic by inhalation, but prolonged exposure may be harmful with such symptoms as cough, mucus production and shortness of breath. Slight skin irritant but prolonged and repeated exposure may cause allergic contact dermatitis. Slightly to moderately toxic if swallowed, but in large quantities can be harmful and cause nausea, abdominal pain and central nervous system depression which could be fatal in extreme cases.
COPPER LINOLEATE	TENN COP 5E	Moderate - Class II	Cabbage	Product TENN COP 5E contains PETROLEUM DISTILLATES. Harmful if swallowed, absorbed through skin or inhaled. Causes moderate skin irritation. Avoid contact with eyes or clothing. Prolonged skin contact may cause allergic reactions.
COPPER OXIDE	NORDOX	Low - Class III	Cabbage, onions, potatoes, carrots, beans, spinach, cucumbers, lettuce	Inhalation of dust, mists of copper salts and copper fumes results in irritation of the upper respiratory tract and, on occasion, perforation of the nasal septum. It may exacerbate symptoms in persons with impaired pulmonary function. Ingestion results in irritation of the gastrointestinal tract with salivation, nausea, vomiting, gastric pains, hemorrhagic gastritis and diarrhea. Chronic exposure may result in anemia.
COPPER OXYCHLORIDE	COC WP	Moderate - Class II	Beans	Symptoms of acute poisoning from ingesting large amounts of copper salts include blue- green color (sometimes observed in vomit), coma and jaundice. Systemic toxic effects include widespread capillary damage, kidney and liver injury, and central nervous system excitation followed by depression. Inhalation of dust and mists of copper salts can result in irritation of nasal mucous membranes and, on occasion, perforation of the nasal septum. Causes substantial but temporary eye injury. May cause allergic reactions.
COPPER OXYCHLORIDE + COPPER SULFATE (BASIC)	C-O-C-S COPODUST, WDG, WETTABLE	Moderate - Class II and Low - Class III (*)	Potatoes	Low to moderately toxic by inhalation or dermal contact. May be harmful if swallowed or inhaled. May cause irritation of eyes, nasal passages, throat and skin. Prolonged or repeated exposure may increase irritation, particularly to eyes and mucous membranes. Overexposure can lead to nausea, diarrhea, gastrointestinal distress, headaches, weakness and, in severe cases, possible liver and kidney damage.

COPPER SULFATE (BASIC)	BASIC COPPER 53WP; TRI-BASIC COPPER; BASICOP;CUPROXAT; TOP COP + SULFUR; MICROCOP	Moderate - Class II and Low - ClassIII (*)	Cabbage, peaches, onions, potatoes, carrots, apples, sugar beets, beans, spinach, cucumbers, cantaloupes, lettuce, cherries, pears	Direct contact may cause substantial but temporary eye damage. Strong irritant of nose and throat ; excessive exposure may cause cough, mucus production and shortness of breath. Excessive exposure may produce skin irritation and allergic contact dermatitis. Ingestion may irritate the gastro-intestinal tract with symptoms such as nausea, vomiting, salivation, gastric pain, hemorrhagic gastritis and diarrhea. It could also cause liver and kidney damage and central nervous system stimulation followed by depression. Chronic effects of prolonged exposure may include irritation of the upper respiratory tract, dermatitis, anemia and liver and kidney damage.
COPPER SULFATE (ANHYDROUS)	COPPER- Z 4/4	High - Class I	Potatoes	Contact can cause severe skin irritation and burns.; repeated contact may cause skin thickening. Eye contact may cause severe irritation and burns leading to permanent damage. Harmful or fatal if swallowed. Inhalation can irritate nose, throat and lungs, causing coughing and wheezing. Repeated exposure may shrink the lining of the inner nose. May cause cancer.
CYMOXANIL	CURZATE 60DF	Moderate - Class II	Potatoes	Information is from animal studies. Inhalation may cause eye irritation and tearing, pain, blurred vision, irritation of the nose and throat with sneezing, sore throat and runny nose, and incoordination. Skin contact may cause irritation with burning, itching, swelling, redness or rash. Eye contact may cause eye irritation with tearing, pain and blurred vision. Ingestion may cause temporary nervous system depression with dizziness, confusion, incoordination, drowsiness or unconsciousness, blood effects, pathological changes in the liver and weight loss.
1-3-DICHLOROPROPENE	TELONE II	Moderate -Class II- RUP	Cabbage, potatoes, sugar beets, onions, beans, spinach, sweet corn, cucumbers, cantaloupes, lettuce, carrots	1-3-DICHLOROPROPENE may cause severe eye irritation, lacrimation and slight corneal injury. Prolonged exposure may cause skin irritation; potential skin sensitizer (animal studies). Ingestion may cause gastrointestinal irritation and ulceration, and in large amounts may be fatal. Aspiration through lungs may result in injury to other body systems.. Excessive inhalation exposure may cause irritation of the upper respiratory tract and lungs. Excessive vapor concentrations may be fatal. Caused cancer in lab animals.

1-3-DICHLOROPROPENE + CHLOROPICRIN	TELONE C17	High - Class I - RUP	Cabbage, onions, potatoes, carrots, sugar beets, beans, spinach, sweet corn, cucumbers, cantaloupes, lettuce	For symptoms of 1-3-DICHLOROPROPENE exposure, see TELONE II, above. Signs and symptoms of exposure to CHLOROPICRIN, are described earlier in this table.
DICLORAN	BOTRAN 75 W	Low - Class III	Peaches, onions, beans, cucumbers, lettuce, cherries, potatoes	Practically nontoxic. Causes slight eye irritation. Dust may be irritating to the respiratory tract. Harmful if it comes in contact with skin or if it is swallowed or inhaled.
DIMETHOMORPH + MANCOZEB	ACROBAT MZ	Low-Class III	Potatoes	Harmful if swallowed or absorbed through skin. Causes moderate eye irritation. Prolonged or repeated skin contact may cause allergic reactions. ACROBAT MZ may contain more than 0.1% CRYSTALLINE SILICA, which could cause lung damage and cancer.
FENARIMOL	RUBIGAN IE	Moderate - Class II	Apples, pears	May cause severe eye irritation with corneal injury and possible permanent vision impairment. Skin irritant on short exposure; severe on repeated exposure. Low toxicity by ingestion. Excessive inhalation exposure may cause irritation to upper respiratory tract and lungs. A component of some preparations, NAPHTHALENE, can cause heavy perspiration, nausea, vomiting, cataracts and other eye effects. Reported to cause tumors in animals.
FLUDIOXONIL	MAXIM	Low - Class III	Potatoes	Practically nontoxic by ingestion, inhalation and dermal exposure. ETHYLENE GLYCOL is a component of MAXIM with toxic effects. It caused embryo damage in rats and mice. Exposure to high concentrations of mists or aerosols may result in effects on blood, kidneys and central nervous system, with symptoms of headache, dizziness and drowsiness. Other components can cause eye, skin and respiratory irritation as well as skin sensitization.
FOSETYL - AL	ALIETTE WDG, 80	Low- Class III	Cabbage, onions, apples, spinach, lettuce, pears	If inhaled may cause upper respiratory tract irritation. Harmful if ingested. Eye irritant: causes redness and tearing. Irritant if absorbed through skin: causes redness and swelling. ALIETTE contains CRYSTALLINE SILICA, which could cause lung damage and cancer (see ACROBAT MZ, above).

IPRODIONE	ROVRAL 4F, 50	Low to nontoxic - Classes III - IV	Cabbage, onions, potatoes, carrots, lettuce, beans	Acute exposure to ROVRAL products can be harmful by ingestion, inhalation, and eye or skin exposure. Acute ingestion can cause nausea, vomiting, abdominal pain and loss of coordination. Acute inhalation can cause upper respiratory tract irritation. Acute eye exposure can cause severe eye irritation and redness. ROVRAL products contain CRYSTALLINE SILICA which could cause lung damage and cancer (see ACROBAT MZ, above).
MANCOZEB	PENNCOZEB 75DF, 75DR, 80W; MANCOZEB 80, 4F, DITHANE DF, F45, M45, WSP, RAINSHIELD; MANCOZEB 4F; MANEX; MANEB 75DF, 80 W; MANZATE 2000	Low to nontoxic- Classes III - IV	Onions, potatoes, sugar beets, beans, sweet corn, cucumbers, cantaloupes	MANCOZEB is practically nontoxic, a mild skin irritant and a moderate eye irritant. However, MANCOZEB and related compounds have caused concern because of the presence of ETHYLENETHIOUREA (ETU) a degradation product and known carcinogen. Inhalation of vapor or mist can cause irritation of nose, throat and lungs. Direct contact can cause eye irritation. Prolonged or repeated skin contact can cause slight skin irritation and/or dermatitis. The product DITHANE has caused embryo damage and other health effects in animals.
MANCOZEB + COPPER HYDROXIDE	MAN KOCIDE	High - Class I	Cucumbers, cantaloupes, potatoes, sugar beets, onions	MAN KOCIDE contains 46.1% COPPER HYDROXIDE. It is toxic orally, severely irritating and corrosive to eyes, and irritating to the skin and respiratory system. Excessive inhalation may cause cough, mucus production and shortness of breath. Toxic by ingestion with symptoms including nausea, vomiting, abdominal pain and central nervous system depression which, if severe enough, may lead to death. Chronic toxicity is low, except for severe exposures. Also, see COPPER HYDROXIDE earlier in this table for more information.
MANEB	MANEX; MANEB + Zn, 75DF, 80W	Low to nontoxic. Classes III -IV	Sugar beets, cucumbers, potatoes, beans, cabbage, onions, lettuce	May cause irritation to the eyes, skin, nose and throat. Practically nontoxic by ingestion but may irritate the digestive system with diarrhea and vomiting. Prolonged skin contact may cause allergic reactions. Acute exposure may result in hyperactivity and incoordination, loss of muscular tone, nausea, vomiting, diarrhea, loss of appetite, weight loss, headache, confusion, drowsiness, coma, slowed reflexes, respiratory paralysis and death. Also, there are possible effects of ETU production (see MANCOZEB, above).

MANEB + TRIPHENYL TIN HYDROXIDE	PRO - TEX	High - Class I - RUP	Sugar beets, potatoes	Fatal if inhaled. Corrosive, causes irreversible eye damage. May be harmful or fatal if swallowed or absorbed through skin. Do not breathe vapors or spray mist. For more information see TRIPHENYL TIN HYDROXIDE in this table.
MEFENOXAM (METALAXYL)	RIDOMIL GOLD , GOLD MZ, RIDOMIL GOLD (TWIN - PAK BRAVO LIQUID)	Low - Class III	Potatoes, onions	MEFENOXAM is a low toxicity compound, as is METALAXYL. It is slightly toxic by ingestion and dermal contact . It causes very slight eye and skin irritation and has a slight sensitization effect. High doses of exposure can affect the liver.
METALAXYL	RIDOMIL 2E , 50W, 5G; APRON 12.5D, 25 (F), 5L, 50W	Moderate - Class II and Low - Class III	Cabbage, carrots, apples, sugar beets, beans, cucumbers, sweet corn, cantaloupes, lettuce, spinach	METALAXYL is a slightly toxic compound. Animal studies showed slight toxicity by ingestion and dermal application, slight skin and eye irritation but no skin sensitization.
MEFENOXAM + CHLOROTHALONIL	RIDOMIL GOLD/ BRAVO	High - Class I	Onions	RIDOMIL GOLD/ BRAVO contains 4.4% MEFENOXAM and 72% CHLOROTHALONIL. Symptoms of acute exposure include severe irritation or injury to the eyes, and slight irritation to the skin. A skin allergic reaction can occur. For CHLOROTHALONIL see earlier, this table. RIDOMIL GOLD / BRAVO contains AMORPHOUS SILICA (AS) as well as SOLVENTS AND SURFACTANTS. Both are considered possible carcinogens, can damage the respiratory system and irritate skin and eyes.
MEFENOXAM + COPPER HYDROXIDE	RIDOMIL GOLD / COPPER	High - Class I	Onions	RIDOMIL GOLD / COPPER contains 60% COPPER HYDROXIDE and 4.8% MEFENOXAM. Symptoms related to MEFENOXAM and COPPER HYDROXIDE exposure are described elsewhere in this table.
METALAXYL + CHLOROTHALONIL	RIDOMIL / BRAVO	High - Class I	Cantaloupes, cabbage, onions, cucumbers	RIDOMIL BRAVO contains 9% METALAXYL and 72% CHLOROTHALONIL. Symptoms related to METALAXYL and CHLOROTHALONIL exposure are described elsewhere in this table.
METALAXYL + CUPRIC HYDROXIDE	RIDOMIL COPPER 70W	High - Class I	Spinach, potatoes, cucumbers	Symptoms related to METALAXYL and COPPER HYDROXIDE exposure are described elsewhere in this table.

METAM SODIUM	VAPAM, BUSAN 1020.	High - Class I	Cabbage, onions, potatoes, carrots, beans, spinach, sweet corn, cucumbers, cantaloupes, lettuce	Most likely routes of exposure are inhalation and skin contact. May be fatal if swallowed, inhaled or absorbed through skin. Symptoms of acute exposure are excessive salivation, sweating, fatigue, weakness, nausea, headache, dizziness, eye and respiratory tract irritation. Symptoms of chronic irritation include, in addition to the above, conjunctivitis, photophobia and blurred vision.
METHYL ISOTHIOCYANATE + CHLOROPICRIN + 1-3 DICHLOROPROPENE	VORLEX 201	High - Class I - RUP	Cabbage, potatoes, spinach	May be fatal if inhaled, absorbed through skin or swallowed. Causes burns of skin and eyes. May produce kidney and liver damage on prolonged exposure. Clinical signs of METHYL ISOTHIOCYANATE exposure include irritation of the respiratory and digestive tracts. Symptoms include nausea, vomiting, abdominal pain, cough, burning sensation, sputum production and hoarseness. Neurological symptoms include headache, insomnia, depression and paranoia. For 1-3- DICHLOROPROPENE, see earlier in this table.
METIRAM	POLYRAM 80 DF	Practically nontoxic - Class IV	Potatoes	METIRAM is practically nontoxic but can be harmful on excessive exposure. May cause irritation of eyes, nasal passages, throat and skin, blurred vision, fatigue, headache, vertigo, nausea and diarrhea. Symptoms of severe exposure include excessive sweating, tearing, slurred speech, slowed heartbeat, giddiness, confusion, convulsions and coma, and perhaps central nervous system depression, skin rash and psychotic behavior. Preexisting skin or respiratory disorders may be aggravated.
MYCLOBUTANIL	NOVA 40W	Moderate - Class II	Peaches, cherries, apples	Direct eye contact can cause substantial irritation. Prolonged or repeated skin contact can cause slight skin irritation. Harmful if inhaled, swallowed or absorbed through skin. Repeated overexposure may cause adverse reproductive effects and harm to the fetus.
NEEM OIL	TRILOGY	Low - Class III	Potatoes	May cause mild, reversible eye irritation and mild skin sensitization.
PCNB	TERRACLOR 75,75WP, 10G	Low - Class III	Cabbage, sugar beets, beans	Inhalation and skin absorption are the primary routes of entry. Repeated minimal contact with skin may cause sensitization. PCNB is an experimental animal carcinogen.

PCNB + METALAXYL	APRON- TERRACLOR; RIDOMIL PC11G	Low - Class III	Beans	Harmful if swallowed, absorbed through skin or inhaled. Avoid contact with skin, eyes or clothing. Avoid breathing dust.
PCNB + TERRAZOLE	TERRA -COAT L-205N; TERRACLOR SUPER X 20-5D	Moderate - Class II	Beans	Inhalation and skin absorption are primary routes of entry. Excess exposure may cause liver damage. Exposure to vapor may cause dizziness. Repeated, minimal skin contact may cause sensitization. Animal studies indicate some liver damage.
RTU - PCNB	RTU - PCNB	Low - Class III	Beans	Harmful if swallowed, inhaled or absorbed through skin. Avoid breathing dust, vapor or spray mist. Avoid contact with eyes, skin or clothing.
PROPAMOCARB + CHLOROTHALONIL	TATTOO C	High - Class I	Potatoes	Main routes of exposure are skin and eye contact, and spray mist inhalation. Harmful if inhaled or swallowed. Signs and symptoms of overexposure include gastric or intestinal trouble, allergic reactions, impaired breathing, and severe eye irritation. Corrosive to eyes, can cause eye damage (irreversible). Prolonged or repeated skin contact may cause allergic reactions. For CHLOROTHALONIL, see earlier in this table.
PROPICONAZOLE	TILT	Moderate - Class II	Beans	Exposure can cause moderate eye or skin irritation. If swallowed, abdominal pain,nausea,gastritis, diarrhea or breathing difficulty can occur. Prolonged inhalation of vapors can cause respiratory tract irritation and central nervous system depression resulting in headache, dizziness, blurred vision, confusion and nausea. A skin allergic reaction may occur. The PETROLEUM SOLVENT in the product TILT can cause chemical pneumonitis if aspirated.
SODIUM CHLORATE	DEFOL 750; SODIUM CHLORATE 5	Moderate - Class II	Potatoes	Primary routes of entry are eye and skin contact. Eye contact may cause irritation, stinging, tearing and redness. Skin contact may cause redness and mild irritation and aggravate preexisting skin conditions. Toxic by ingestion and inhalation. Ingestion may cause irritation of the mouth and digestive tract. Chlorate poisoning is characterized by a latent period of a few hours, followed by nausea, vomiting, abdominal pains, diarrhea, blood effects and subsequent kidney failure. Acute exposure may damage the liver. Inhalation of mists may aggravate preexisting respiratory conditions.

SODIUM HYPOCHLORITE	AGCLOR 310	High - Class I	Potatoes	Common ingredient of household bleach. Ingestion of large quantities may cause corrosive damage to mucous membranes, and esophageal or gastric perforation. Highly toxic by skin and eye contact. Prolonged skin contact may result in irritation and blisters. Inhalation of fumes will produce severe bronchial irritation and accumulation of fluid in the lungs. Common symptoms include throat irritation, chest pains, wheezing, dizziness, vomiting, nasal irritation, etc.
STREPTOMYCIN	AGRI - MYCIN 17 ; STREPTOMYCIN 17W	Non toxic- Class IV	Apples, beans, pears, potatoes	May cause mild skin irritation or allergic skin reactions. Sensitive patients have shown hives, rashes, headaches, drop in blood pressure, nausea and vomiting. Exposure can result in kidney damage.
SULFUR	MICROTHIOL DISPERS; THAT FLOWABLE SULFUR ; SULFUR 6L, FLOWABLE ; CAVALRY SPRAYABLE SULFUR ; KUMULUS DF; LIQUID SULFUR6; MICROFINE SULFUR; MICROTHIOL SPECIAL; WETTABLE SULFUR; THIOLUX 80	Low to nontoxic - Classes III- IV	Peaches, potatoes, apples, beans, sugar beets, cantaloupes,cherries, pears	Routes of exposure include eye and skin contact, inhalation and ingestion and can vary for different products. May be harmful if swallowed or inhaled. May cause irritation of eyes, nasal passages, throat and skin. Prolonged or repeated overexposure may cause skin and / or eye irritation. If large quantities are ingested effects may include nausea, vomiting, headache and diarrhea. For some products (SULFUR 6L) skin contact may aggravate preexisting skin conditions, and inhalation of mists may aggravate preexisting respiratory conditions. Other products (MICROFINE SULFUR) may cause kidney injury if ingested.
SULFURIC ACID	MANY PRODUCTS	High - Class I - RUP	Potatoes	Corrosive, causes irreversible eye damage and severe skin burns. May be fatal if swallowed, inhaled or absorbed through skin. Ingestion causes severe injury to upper digestive tract. Some symptoms after ingestion or skin contact include corrosion of mucous membranes of mouth, throat and upper digestive tract, pain, nausea, vomiting (sometimes with blood). Circulatory shock is often the immediate cause of death. Inhalation of concentrated vapor may cause serious lung damage. Contact with eyes may result in total loss of vision. Exposure to strong acid mists is carcinogenic to humans.

TEBUCONAZOLE	ELITE 45DF, FOLICUR 3.6F	Moderate - Class II and Low - Class III	Peaches, cherries	Mildly toxic by oral and dermal routes. Based on animal studies, may be toxic to the spleen, liver, adrenals and lens of the eye. The product ELITE contains about 2% CRYSTALLINE SILICA, which may cause lung damage and cancer (see product ACROBAT MZ, earlier in this table) .
THIABENDAZOLE	MERTECT 340 F; DECCO SALT # 19	Low - Class III	Potatoes, carrots, sugar beets, beans	Exposure may result in eye and skin irritation. Ingestion in large amounts may cause gastrointestinal disorders, dizziness, anorexia, nausea, vomiting, headache, blurring of vision, change in urine appearance and odor, and hypersensitivity reactions. The symptoms are brief and related to dose level. THIABENDAZOLE has human reproductive hazard potential. Animal studies showed an increased incidence of anemia and changes in the thyroid, liver, spleen, kidney and gall bladder.
THIOPHANATE METHYL	TOPSIN M 5D, M 70WSB, MW SB, M70W, 5G ; TOPS 2.5D, 5, MZ (+MANCOZEB)	Low to Nontoxic - Classes III-IV	Onions, potatoes, apples, sugar beets, beans, cucumbers	Harmful if absorbed through skin. Causes eye irritation. Avoid contact with skin, eyes or clothing.
THIRAM	ARASAN 50, 70S; THIRAM 42S, 50WP; VITAFLO 280	Moderate - Class II and Low- Class III (*)	Cabbage, beans, spinach, sweet corn, cucumbers, onions cantaloupes, carrots, lettuce	Skin, eyes and respiratory tract irritant, and skin sensitizer. Acute exposure may cause itching, scratchy throat, hoarseness, sneezing, coughing, inflammation of the nose or throat, bronchitis, headaches, dizziness, fatigue, nausea, diarrhea, and other gastrointestinal complaints. Persons with chronic respiratory or skin disease are at increased risk for exposure to this compound. Ingestion of THIRAM and alcohol together may cause stomach pain, nausea, vomiting, headache, slight fever and possible dermatitis. Symptoms of chronic exposure include drowsiness, confusion, loss of sex drive, incoordination, slurred speech, and weakness, in addition to the acute exposure. Repeated exposure can cause allergic dermatitis, watery eyes, sensitivity to light, and conjunctivitis.
TRIADIMEFON	BAYLETON 50 DF, 50W	Low - Class III	Apples, sugar beets, cucumbers, cantaloupes, pears	BAYLETON is mildly toxic orally and dermally. Routes of entry are inhalation, skin and eye contact and skin absorption. Moderate eye irritation may occur from contact with granular material or spray mixture. BAYLETON may contain up to 1.5% CRYSTALLINE SILICA which can cause lung damage and cancer (see ACROBAT MZ earlier in this table) .

TRIFLUMIZOLE	PROCURE 50WS	Low- Class III	Apples, pears	Primary routes of entry are inhalation and skin absorption. Contact with eyes can cause irritation. Chronic inhalation exposure may cause lung damage. Repeated minimal contact with skin may cause an allergic reaction in some individuals. The product PROCURE contains some CRYSTALLINE SILICA (see above).
TRIFORINE	FUNGINEX FUNGICIDE	High - Class I	Apples	Corrosive, causes irreversible eye damage. Harmful if swallowed, inhaled or absorbed through skin. Low dermal toxicity and moderate acute inhalation toxicity (animal studies).
TRIPHENYLTIN HYDROXIDE (FENTIN HYDROXIDE)	TRIPLE TIN ; SUPER TIN 80WP; FLO-TIN ; DU-TER	High - Class I - RUP	Potatoes, sugar beets	Potent central nervous system toxin and skin irritant. May be absorbed through the skin. May be fatal if swallowed. Symptoms of acute toxicity are nausea, abdominal cramping, diarrhea and vomiting. Inhalation may irritate the upper respiratory tract. Overexposure may produce coughing, headache and nausea. Also severe eye and skin irritation and contact dermatitis. TRIPHENYLTIN HYDROXIDE causes birth defects in lab. animals. Exposure to this compound during pregnancy should be avoided.
VINCLOZOLIN	RONILAN DF	Low - Class III	Onions, lettuce	Harmful if swallowed, inhaled or absorbed through skin. Causes eye irritation. Do not get on skin, in eyes or on clothing. Prolonged exposure or skin contact may cause allergic reactions. VINCLOZOLIN shows embryo-toxicity, reproductive toxicity, cataract formation and endocrine changes (animal tests). The product RONILAN DF contains CRYSTALLINE SILICA (see other places in this table), which can cause lung damage and cancer.
ZIRAM	ZIRAM 76DF	High - Class I	Peaches, cherries	Corrosive: causes irreversible eye damage .May be fatal if inhaled, harmful if swallowed or absorbed through skin. Moderately to slightly toxic if swallowed or absorbed through skin, slightly irritating to the skin and severely irritating or corrosive to eyes (animal tests). Repeated exposure may cause allergic skin reactions. Swallowing may cause nausea, vomiting and diarrhea.

(*) Variable depending on product and /or formulation. Check product label.

HERBICIDES USED ON MINOR COLORADO CROPS

MAIN INGREDIENT	PRODUCTS	ACUTE TOXICITY	CROPS WHERE USED	SYMPTOMS
2, 4 -D AMINE	WEEDAR 64, 64TF; AMINE 4E	High - Class I	Sweet corn, apples, cherries, peaches, pears	Respiratory tract irritant. Eye exposure may cause irreversible damage. Skin overexposure may cause nausea, vomiting, abdominal pains, decreased blood pressure, muscle spasms. Harmful if inhaled or swallowed. Repeated overexposure may affect liver, kidneys and gross motor function.
ALACHLOR	LASSO 4L, MICRO-TECH, PARTNER 65 WDG	High - Class I, Moderate -Class II and Low - Class III (*) - RUP	Beans, sweet corn	Mild eye and mucose membrane irritant. Allergic contact dermatitis reported. Likely to cause cancer at high doses.
ATRAZINE	AATREX 4L, AATREX 90	Low - Class III - RUP	Sweet corn	Acute exposure may cause mild irritation of eyes, skin and respiratory tract. If swallowed, nausea, vomiting or diarrhea can result. Skin sensitization (allergic reaction) can occur in some individuals.
BENEFIN	BALAN 2.5 G	Low - Class III	Lettuce	Ingestion is likely to be followed by vomiting and diarrhea. Skin contact or inhalation may exacerbate preexisting allergies. Reported symptoms (some associated with presence of ORGANIC SOLVENTS) include: nausea, headaches, rash, eye irritation, fever, drowsiness, chills, abdominal cramps, liver pain, memory loss, dizziness , etc.
BENSULIDE	PREFAR 4E, 6E	Low -Class III	Onions, cucumbers, cantaloupes, lettuce	Skin and eye irritant. Exposure symptoms include salivation, sweating, headache, nausea, muscle twitching, tremors, incoordination, tearing, blurred vision, abdominal cramps, diarrhea, chest discomfort. Ingestion can cause irritation of the gastrointestinal tract and, at high doses, central nervous system depression (drowsiness, dizziness, fatigue). Aspiration of swallowed or vomited product into lungs may induce severe lung congestion resulting in labored breathing, coma and death.

BENTAZON	BASAGRAN	Low - Class III	Beans, sweet corn	Slight toxicity by ingestion or dermal absorption. Irritant to mucose membranes. Moderate eye irritant. Contact with skin (prolonged) may cause allergic reactions. Massive ingestion can cause vomiting, diarrhea, difficult breathing, etc.
BENTAZON + ATRAZINE	LADDOCK	High - Class I	Sweet corn	Causes eye damage and skin irritation- See individual compounds for more information.
BROMOXYNIL	BUCTRIL	Moderate -Class II	Onions	Causes irritation of eyes and skin, redness and tearing in eyes and swelling in skin. Prolonged contact may cause chronic dermatitis, reproductive disorders and developmental problems. If inhaled, may cause upper respiratory tract irritation, coughing, wheezing, nausea, headache, depression. If ingested, may cause nausea, vomiting, abdominal pain, weakness of arms and/or legs, dizziness, incoordination. Aspiration of swallowed or vomited product can cause severe pulmonary complications.
BUTYLATE	SUTAN PLUS	Low - Class III	Sweet corn	Irritation of skin and respiratory tract membranes. Scratchy throat, sneezing, coughing. Slight eye irritation with potential for permanent eye damage.
CLETHODIM	PRISM, SELECT 2.0 EC	Moderate- Class II	Onions , sugar beets, beans	Causes substantial but temporary eye irritation. Harmful if swallowed or inhaled. Signs of toxicity in test animals (high levels of exposure) include: lethargy, ataxia, irregular breathing, lacrimation and loose stools. Inhalation may cause nasal and respiratory irritation, and central nervous system effects including dizziness, weakness, fatigue, nausea, headache, loss of consciousness and even death. Ingestion may cause gastrointestinal irritation, nausea, vomiting and diarrhea. Individuals with preexisting diseases of the liver, red blood cells or central nervous system may have increased susceptibility to the toxicity of excessive exposures.
CLOPYRALID	STINGER	Low - Class III	Sugar beets	Severe eye irritant, causes eye injury. Mild skin irritant on repeated or prolonged exposure. Overexposure may cause nose and throat irritation, incoordination, confusion, hypothermia and even death.

CYANAZINE	BLADEX, EXTRAZINE	Moderate- Class II - RUP	Sweet corn	If swallowed, may produce gastrointestinal irritation and be fatal. Harmful if inhaled or absorbed through skin. Central nervous system effects evidenced by giddiness, headaches, dizziness and nausea. Fatal in extreme cases. Potential for kidney and liver damage. Exposure may aggravate preexisting eye, skin, respiratory and gastrointestinal tract disorder.
CYCLOATE	RO - NEET 6E	Low - Class III	Sugar beets, spinach	Skin and eye irritant. Could affect nervous system causing salivation, sweating, nausea, tremors, incoordination, headache, blurred vision, etc.
DCPA	DACTHAL W-75	Practically nontoxic- Class IV	Cabbage, cantaloupes	Compound has very low toxicity to mammals. Mild eye irritant.
DESMEDIPHAM + PHENMEDIPHAM	BETAMIX	Moderate - Class II	Sugar beets	May produce severe eye irritation, especially on prolonged contact. Can cause moderate skin irritation. Ingestion of significant amounts may cause increased salivation, confusion, muscular incoordination, weakness and tremors. Prolonged inhalation of solvent vapor may cause respiratory tract irritation, headache and nausea. Prolonged exposure may aggravate preexisting conditions of the respiratory system.
DESMEDIPHAM + PHENMEDIPHAM + ETHOFUMESATE	BETAMIX PROGRESS	Moderate - Class II	Sugar beets	Slight skin irritant on brief contact. Prolonged or frequent skin contact may cause allergic reactions in some individuals. Prolonged inhalation of concentrated vapor may cause irritation of the eyes, nose and throat. Extremely high concentrations may cause headache, dizziness, nausea and faintness. Ingestion of very high doses may cause abdominal discomfort, vomiting and diarrhea.
DICHLORBENIL	CASORON 4G; NOROSAC 4G	Low - Class III	Apples, cherries, peaches, pears	Moderately toxic to humans by ingestion and skin absorption. Skin exposure reported to cause mild dermatitis. Reports of tumor formation in animals.
DIETHATYL	ANTOR 4ES	Moderate - Class II	Spinach	DIETHATYL may cause skin sensitization reactions in certain individuals. Causes substantive but temporary eye injury. Harmful if swallowed.

DIMETHENAMID	FRONTIER 6.0	Moderate - Class II	Beans, sweet corn	Causes substantial but temporary eye injury. A component of FRONTIER, NAPHTHALENE, can cause cramps, nausea, vomiting, diarrhea, bladder irritation, listlessness, and brownish urine by ingestion. Inhalation may cause headache, confusion and excitement. Chronic overexposure may result in liver and kidney disorders. Acute overexposure or ingestion may cause central nervous system effects including headache, dizziness, drowsiness and confusion. Aspiration of liquid into lungs may result in chemical pneumonitis, which could be fatal. Prolonged skin contact may cause dermatitis. Possible human carcinogen.
DIMETHENAMID + ATRAZINE	GUARDSMAN; LEADOFF	Moderate - Class II - RUP	Sweet corn	Causes substantial but temporary eye injury. Prolonged or repeated skin contact may cause allergic reactions. The following symptoms can be caused by ETHYLENE GLYCOL and NAPHTHALENE, minor components of both products listed here. Acute overexposure can cause severe abdominal distress, central nervous system effects (headache, dizziness, drowsiness, etc.), respiratory and/or kidney failure. Chronic overexposure may lead to liver degeneration and severe kidney damage. Ingestion can result in cramps, vomiting, diarrhea, bladder irritation and brownish urine. Aspiration of the liquid into the lungs may result in chemical pneumonitis, which could be fatal.
DIQUAT	DIQUAT	Moderate - Class II	Potatoes	Acute effects of ingestion include irritation of throat, mouth and stomach, nausea, vomiting, abdominal pain and diarrhea. Eye contact may result in severe but temporary irritation. Overexposure to spray mist may result in upper respiratory tract irritation with sore throat, coughing, chest tightness and breathing difficulties. DIQUAT causes kidney damage and, depending on dose, can cause prolonged but temporary renal failure. Direct contact can produce severe skin irritation. Absorption through damaged or injured skin can result in systemic poisoning.
DIURON	KARMEX; DIREX 80DF, 4L	Moderate - Class II and Low- Class III (*)	Apples, peaches, pears	May cause eye, skin and upper respiratory tract irritation. Overexposure by inhalation may cause liver enlargement, spleen and thyroid effects, red blood cell destruction, weakness, shortness of breath. Moderate eye irritant with tearing, discomfort, and blurred vision. Skin absorption can cause temporary skin swelling, redness, discomfort. High exposure levels could affect central nervous system.

ENDOTHALL	DES-I-CATE	High - Class I	Potatoes	May be absorbed through skin, causing light to moderate irritation. Also irritating to nose, eyes and throat. Greatest hazard is eye irritation, caused by burning of tissues on exposure. Ingestion may cause vomiting and diarrhea.
EPTC	EPTAM 7E, 10G; ERADICANE 6.7E, ERADICANE EXTRA	Low - Class III	Potatoes, beans, sweet corn	Irritation of skin, eyes and respiratory tract. Nervous system symptoms may include salivation, sweating, headaches, nausea, muscle twitching, tremors, incoordination, blurred vision, tears, abdominal cramps, diarrhea, chest discomfort, etc.
ETHALFLURALIN	SONALAN HFP	High - Class I	Beans	Harmful if swallowed or inhaled. Corrosive, causes burns and irreversible eye damage. Prolonged or repeated skin contact may cause severe skin irritation, and allergic reactions. If aspirated into lungs may result in injury to other body systems. ETHALFLURALIN caused liver, kidney, thyroid and blood effects in animals.
ETHOFUMESATE	PROGRASS ; NORTRON SC	High - Class I and Low - Class III (*)	Sugar beets	The product PROGRASS can cause irreversible eye damage and is a severe skin irritant. Repeated skin contact may cause allergic reaction. High concentration of solvent vapors may cause dizziness, weakness, incoordination and drowsiness. The product NORTRON is a light to negligible eye or skin irritant, and not a skin sensitizer under normal use. It can be harmful if inhaled, swallowed or absorbed through the skin.
FLUAZIFOP-P-BUTYL	FUSILADE 2,000, DX	Low to nontoxic - Classes III - IV	Onions, carrots, cherries, peaches	Causes eye irritation. Harmful if inhaled or absorbed through skin. Prolonged or repeated skin contact may cause allergic reaction. Severe gastrointestinal disturbances can be associated with large scale ingestion or inhalation of hydrocarbon solvent in this formulation. Symptoms include drowsiness, dizziness, incoordination, fatigue, difficult breathing. Coma and death may also result.
GLUFOSINATE - AMMONIUM	RELY 1E	Moderate - Class II	Apples	Harmful if swallowed, inhaled or absorbed through skin. Causes temporary but substantial eye injury. Overexposure symptoms include nausea, vomiting, diarrhea, tremors, convulsions, respiratory depression, uneven heart beat, decreased blood pressure, loss of consciousness, drowsiness. Symptoms may be delayed by up to 48 hrs. after exposure.

GLYPHOSATE	ROUNDUP, ROUNDUP ULTRA, 4L	Moderate- Class II and Low - Class III (*)	Cabbage, onions, potatoes, carrots , beans, spinach, cucumbers, cantaloupes, lettuce, apples, cherries, peaches, pears	Skin, eye and respiratory tract irritation. Causes substantial but temporary eye injury. Harmful if swallowed or inhaled. Slightly toxic if swallowed in small amounts, but large amounts can cause vomiting, abnormally low blood pressure and accumulation of fluid in the lungs.
IMAZETHAPYR	PURSUIT	Moderate -Class II and Low - Class III (*)	Beans	Harmful if swallowed or absorbed through skin. Causes moderate eye irritation. NAPHTHALENE is a component of some formulations . For symptoms of exposure to NAPHTHALENE see DIMETHENAMID (above in this table).
LINURON	LINEX 4L; LOROX 4L, DF AND OTHER FORMULATIONS	Low - Class III	Carrots	Mild, reversible eye irritant. Mild skin irritant: does not produce skin sensitization, but extensive contact by skin may include skin irritation with rash and discomfort. Slightly toxic if swallowed: may cause drowsiness, exaggerated reflexes, pallor, tearing , aciduria, diarrhea, nosebleed and irritability. Long periods of exposure may cause nose and throat irritation.
METOLACHLOR	DUAL, DUAL MAGNUM, DUAL II, DUAL 2E	Low - Class III	Potatoes, beans, sweet corn, onions	Irritation of skin, eyes and respiratory tract. Abdominal cramps, anemia, shortness of breath, dark urine, convulsions, nausea, sweating, dizziness, etc.
S-METOLACHLOR	DUAL MAGNUM	Low - Class III	Potatoes, beans, sweet corn	Eye contact causes eye irritation. Inhalation may cause irritation of eyes, nose and throat, and dizziness. Ingestion may cause nausea and vomiting. Large amounts, if retained, lead to symptoms of central nervous system depression.
S-METOLACHLOR + PROTECTOR	DUAL II MAGNUM	Low - Class III	Potatoes, beans, sweet corn	We list here the toxicity of other components of DUAL II MAGNUM. BENOXACOR can cause stomach, liver and kidney toxicity at high doses, and skin sensitization on repeated exposures. Caused tumors in rodents. PETROLEUM SOLVENTS can cause dizziness and headaches, as well as irritation of eyes end respiratory tract by inhalation of vapors. SURFACTANTS can cause severe eye irritation leading to permanent eye damage, as well as severe skin and respiratory tract irritation (nasal discomfort and discharge, chest pains, cough).
METRIBUZIN	SENCOR 4 AND OTHER FORMULATIONS	Low -Class III	Potatoes, carrots	Animal studies have shown that this material is mildly toxic orally and essentially nontoxic dermally. It can cause minimal, reversible eye irritation.

NAPROPAMIDE	DEVRIKOL 50DF, 50WP	Low - Class III	Cabbage, apples, peaches, cherries, pears	Toxic effects from acute exposure in rats include diarrhea, excessive tearing and urination, depression, salivation, rapid weight loss, decreased blood pressure, and fluid in body cavities.
NAPTALAM	ALANAP - L	Moderate - Class II	Cucumbers	Contact with eyes may cause irritation. Contact with skin may cause an allergic skin reaction.
NORFLURAZON	SOLICAM 80DF	Low to Nontoxic - Classes III- IV	Apples, pears	Mildly irritating to eyes and skin. Increase of tumors in mice has been reported.
ORYZALIN	SURFLAN AS, 4E	Low to Nontoxic - Classes III-IV	Apples, cherries, peaches, pears	Harmful if swallowed, inhaled or absorbed through skin. Prolonged exposure may cause skin irritation and allergic reactions. Exposure symptoms include headaches, dizziness, weakness, drowsiness, nausea, incoordination, etc. Some of these are caused by PROPYLENE GLYCOL, a component of SURFLAN AS and a possible carcinogen (animal studies).
OXYFLUORFEN	GOAL 1.6E, 2XL	Moderate - Class II and Low - Class III (*)	Cabbage, onions, apples, peaches, cherries, pears	Inhalation of solvent vapor or mist can irritate respiratory passages and cause headaches, nausea, dizziness, drowsiness, incoordination, stupor and unconsciousness. Skin contact can cause substantial irritation, as well as dermatitis if prolonged or repeated. Ingestion can cause gastrointestinal irritation, nausea and vomiting. Repeated exposure can cause kidney and liver damage.
PARAQUAT	GRAMOXONE EXTRA, SUPER	High - Class I - RUP	Cabbage, onions, carrots, beans, cucumbers, potatoes, cantaloupes, lettuce, apples, cherries, peaches, pears	Ingestion symptoms include burning sensation, ulceration of mouth and digestive tract, vomiting, diarrhea. May cause liver damage, kidney failure and pulmonary insufficiency leading to death. Repeated skin contact may irritate and damage skin. Prolonged inhalation can cause irritation of upper respiratory tract, burning sensation, nose bleeds and sore throat.
PENDIMETHALIN	PROWL 3.3 EC	Low - Class III	Onions, potatoes, beans, apples, cherries, peaches, pears	Slightly to practically nontoxic by ingestion. Inhalation of dust or fumes may cause moderate irritation of skin and mucosa membranes. SOLVENT HYDROCARBON (in some products) increases risk of chemical pneumonia and fluid accumulation in lungs.

PRONAMIDE	KERB 50W	Low - Class III - RUP	Lettuce, apples, cherries, peaches, pears	Potential eye irritant. Skin irritant on prolonged contact. Inhalation can irritate nose and throat causing cough, phlegm and/or tightness of chest. Repeated overexposure may cause kidney and liver damage. Practically nontoxic by ingestion. Caused liver tumors in mice.
PYRAZON	PYRAMIN; PYRAMIN DF	Low - Class III	Sugar beets	Harmful if swallowed or absorbed through skin. May cause eye irritation. Prolonged or repeated skin contact may cause an allergic reaction. Overexposure to CRYSTALLINE SILICA (a component of some formulations) can result in lung damage and cancer.
PYRIDATE	LENTAGRAN 45WP; TOUGH 3.75 EC	Moderate - Class II	Cabbage	PYRIDATE is slightly toxic by ingestion, a moderate eye irritant, and a mild skin irritant (animal studies). of For TOUGH 3.75, many exposure symptoms can be due to the component CYCLOHEXANONE. Prolonged exposure of skin may be harmful; inhalation may cause irritation of respiratory tract, headache, nausea, vomiting, incoordination, loss of consciousness and even death. Prolonged contact of vapors with skin or eyes may result in chemical burns. Repeated exposure may cause liver and kidney damage.
QUIZALOFOP	ASSURE II	High - Class I	Sugar beets, beans	Severe eye irritant. Moderate skin, nose and throat irritant. May be harmful if absorbed through skin, swallowed or inhaled. The product ASSURE II contains NAPHTHALENE, which can cause headaches, dizziness and confusion on excessive prolonged inhalation (also, see DIMETHENAMID, above).
RIMSULFURON	MATRIX	Practically nontoxic - Class IV	Potatoes	Causes eye irritation. Harmful if absorbed through skin. Avoid contact with skin, eyes or clothing. Avoid breathing dust or spray mist. Effects of overexposure to RIMSULFURON by eye contact may include eye irritation with discomfort, tearing, or blurring of vision.
SETHOXYDIM	POAST, POAST 1.5E	Moderate - Class II	Cabbage, onions, carrots , sugar beets, beans, spinach, cucumbers, cantaloupes, lettuce, apples, cherries, peaches, pears	Some symptoms may be related to the presence of NAPHTHALENE in products. Inhalation results in irritation of respiratory tract. Ingestion can cause cramps, nausea, vomiting and diarrhea. Acute overexposure can affect central nervous system leading to headaches, dizziness, drowsiness and confusion. Prolonged or repeated skin contact can cause dermatitis.

SIMAZINE	PRINCEP 4L, 80W, CALIBER 90W; SIMAZINE 4L, 90WDG	Low to Nontoxic - Classes III - IV	Apples, cherries, pears	Harmful if inhaled or absorbed through skin: could aggravate preexisting conditions. Rashes and dermatitis have been reported. Moderate eye irritant. Ingestion may cause nausea, vomiting and diarrhea. Some reported symptoms of exposure include difficulty in walking, tremors, convulsions, slow respiration, pinpoint pupils, abdominal pains, headaches, dizziness and drowsiness.
SULFOSATE	TOUCHDOWN 5	Low - Class III	Onions, lettuce, cantaloupes, potatoes cucumbers, spinach, cabbage, carrots	Moderate eye irritant. Harmful if swallowed or absorbed through skin. Avoid contact with eyes, skin or clothing.
TERBACIL	SINBAR 80W	Nontoxic - Class IV	Apples, peaches	Low acute toxicity. May irritate skin, eyes and membranes in upper respiratory tract. Harmful if swallowed : ingestion likely to cause vomiting and diarrhea. Ingestion of high doses may affect liver functions (animal studies). Overexposure by eye contact may cause eye irritation, discomfort, tearing and blurred vision.
TRIFLURALIN	TREFLAN; TRIFLURALIN	High - Class I, Moderate - Class II, and Low - Class III (*)	Cabbage, potatoes, carrots, beans, cucumbers, cantaloupes, sugar beets	May cause moderate eye irritation. Short exposure may cause irritation, drying or flaking of skin. Studies in animals have found effects on blood, kidney and liver. Some products contain NAPHTHALENE(see DIMETHENAMID, above), and others contain CRYSTALLINE SILICA which could cause lung damage and cancer.
TRIFLUSULFURON METHYL	UPBEET	Low - Class III	Sugar beets	Mild and temporary eye irritation. Overexposure by eye contact may initially include eye irritation with discomfort, tearing or blurring of vision. Overexposure by skin contact may initially include skin irritation with discomfort and rash. Overexposure by inhalation may initially include irritation of upper respiratory passages with coughing and discomfort.

(*) Variable depending on product, crop or route of entry. Follow instructions on label.

INSECTICIDES USED ON MINOR COLORADO CROPS

MAIN INGREDIENT	PRODUCTS	ACUTE TOXICITY	CROPS WHERE USED	SYMPTOMS
ABAMECTIN	AGRI-MEK 0.15E	Moderate - Class II - RUP	Pears	Harmful if inhaled or absorbed through skin. May be fatal if swallowed. Causes substantial but temporary eye injury. Allergic skin reactions on repeated exposure. Symptoms of poisoning (in laboratory animals) include pupil dilation, vomiting, convulsions, incoordination, lethargy, tremors and coma. Very high doses have caused death from respiratory failure.
ACEPHATE	ORTHENE 75S, 75WSP	Low- Class III	Cabbage, beans, lettuce	Minor eye and skin irritant. Exposure symptoms include: dizziness, headache, weakness, pupil constriction, blurred vision, excessive salivation or nasal discharge, sore throat, coughing, profuse sweating, nausea, abdominal cramps, diarrhea and vomiting. Severe poisoning may result in incontinence, loss of consciousness, convulsions, etc. Untreated severe poisoning may be fatal.
ALDICARB	TEMIK 15G	High- Class I - RUP	Sugar beets, beans	Extremely toxic by oral and dermal routes. Eye irritant. Nausea, vomiting, abdominal pain, pinpoint pupils, blurred vision, heavy sweating, tremors, convulsions, headaches. High doses can be fatal.
AMITRAZ	MITAC 50W	High - Class I	Pears	Corrosive: causes irreversible eye damage or skin burns. Frequent skin contact may cause allergic reactions. Acute exposure effects include: drowsiness, coma, unconsciousness, pinpoint pupils, low blood pressure, slow heart beat, vomiting, etc. Death has been reported in several poisoning cases. Acute symptoms are partly attributable to the XYLENE or other solvents present in the formulation.

AZINPHOS METHYL	AZINPHOSMETHYL 2 ; GUTHION 35W, 50 W, 2S, 2L; SNIPER 2E, 50PVA	High - Class I - RUP	Peaches, potatoes, apples, beans, cucumbers, cantaloupes, cherries, pears	AZINPHOS METHYL is a dermal sensitizer. Systemic intoxication can result from inhalation, dermal absorption or ingestion. First symptoms may be nausea, increased salivation, lacrimation, blurred vision and constricted pupils. Other symptoms include: vomiting, diarrhea, abdominal cramps, dizziness, sweating, tightness of chest, wheezing and laryngeal spasms. If the poisoning is severe, weakness, muscle twitching, confusion, ataxia, slurred speech, convulsions, low blood pressure, cardiac irregularities, loss of reflexes and coma may occur. Death may occur in extreme cases.
BACILLUS THURINGIENSIS	DIPEL 2X, 4L; BIOBIT W, F ; JAVELIN WG; M-TRAK AND OTHERS	Low - Class III	Cabbage,sugar beets, peaches, potatoes, carrots, spinach, lettuce, cherries	It may cause irritation of nose, throat, lungs, skin and transient eye irritation. Chronic inhalation of dust may cause asthma - like effects. Ingestion may cause diarrhea, fluid loss, blood in stools, low blood pressure and elevated blood sodium. May aggravate pre-existing skin, eye, gastrointestinal and respiratory conditions.
BIFENTHRIN (BIPHENTHRIN)	CAPTURE 2EC	Moderate- Class II - RUP	Sweet corn, cucumbers, cantaloupes	Moderate oral and low dermal and inhalation toxicity. Mild eye irritant. Signs of toxicity (in lab. animals) included: tremors, convulsions, ataxia, bloody tears and bloody nasal discharge. Skin contact may produce reversible sensations such as numbness, burning or tingling. CAPTURE 2EC has other components which may cause additional symptoms. Inhalation of vapors of AROMATIC HYDROCARBONS may result in vision disturbances, drowsiness and irritation of eyes, skin and mucous membranes; chronic exposure may cause headaches, dizziness, liver and kidney damage. BUTANOL vapors may produce headache, drowsiness and irritation to nose and throat. Excessive exposure may result in contact dermatitis and irritation of mucous membranes.
CARBARYL	SEVIN XLR+, 80S, 50W, 4F, 80WSP; ADIOS	Moderate- Class II and Low - Class III	Cabbage, peaches, potatoes, carrots, sugar beets, beans, sweet corn, cucumbers, cantaloupes, cherries	Harmful if absorbed through skin, inhaled or ingested. Ingestion of some products (SEVIN 50W, 80S) could be fatal. Symptoms of exposure to CARBARYL are nausea, vomiting, diarrhea, abdominal pain, excess salivation, pinpoint pupils, blurred vision, profuse sweating, temporary paralysis, respiratory depression, convulsions, etc.

CARBOFURAN	FURADAN 4F	High - Class I - RUP	Potatoes	Poisonous if swallowed or inhaled. May be harmful or fatal as a result of skin or eye contact. Warning symptoms of poisoning are weakness, headache, sweating, nausea, vomiting, diarrhea, tightness in chest, blurred vision, pinpoint pupils, excessive salivation, abdominal cramps, convulsions, coma, and tremors.
CHLORETHOXYFOS (CHLOROETHOXYFOS)	FORTRESS 2.5G	High - Class I - RUP	Sweet corn	Overexposure symptoms include weakness, headaches, tightness of chest, blurred vision, pinpoint pupils, salivation, sweating, nausea, vomiting, diarrhea, muscle tremors, abdominal cramps, etc. In severe cases, convulsions, loss of consciousness and respiratory failure may occur. Repeated exposure can lead to an asymptomatic increase in the susceptibility to poisoning.
CHLORPYRIFOS	LORSBAN 4E, 15G, 50W	High - Class I, Moderate - Class II and Low- Class III (*)-RUP	Peaches, onions, apples, sugar beets, sweet corn, cherries, pears	May cause moderate eye irritation and/or corneal injury. Prolonged exposure may cause moderate skin irritation. Moderate oral toxicity. Excessive inhalation symptoms include headache, dizziness, incoordination, muscle twitching , tremors, nausea, abdominal cramps, diarrhea, sweating, pinpoint pupils, blurred vision, salivation, tearing, tightness in chest, excessive urination, and convulsions. SOLVENT in LORSBAN 4E can affect liver, kidney and blood at high exposure levels.
CLOFENTEZINE	APOLLO 1SC	Low - Class III	Peaches, cherries, pears	Slight skin and eye irritant. Weak skin sensitizer in animal studies. No known health effects by ingestion or inhalation.
CRYOLITE	KRYOCIDE 96W	Low - Class III	Cabbage, cucumbers, cantaloupes, lettuce	Considered practically non toxic if swallowed, slightly toxic if absorbed through the skin or inhaled, moderately irritating to the eyes and non irritating to the skin (animal tests). Severe or repeated exposure may cause kidney damage and bone effects including joint pain, tooth erosion and discoloration. Exposure to this material could aggravate pre existing kidney disease. Symptoms of exposure include nausea, abdominal pain, diarrhea, salivation, thirst , breathlessness, sweating, etc. Chronic poisoning can cause loss of weight, anorexia, anemia, wasting, dental defects, shortness of breath, constipation and liver pains.

CYFLUTHRIN	BAYTHROID 2	High - Class I - RUP	Carrots, sweet corn	Severe eye irritation. Moderate skin irritation with symptoms such as itching, skin reddening, rash and tingling sensation. Irritation of mucous membranes of upper respiratory tract may occur from inhalation of aerosols . BAYTHROID 2 contains AROMATIC HYDROCARBON SOLVENTS which can be irritating to eyes, nose and throat and cause headaches, dizziness, nausea, drowsiness, unconsciousness and sometimes death. This product can be a skin sensitizer (animal studies).
CYFLUTHRIN + TEBUPIRIMFOS	AZTEC 2.1G	Moderate - Class II - RUP	Sweet corn	Inhalation symptoms like tightness of chest, wheezing and laryngeal spasms may be pronounced at first. If poisoning is severe, convulsions, low blood pressure, cardiac irregularities, loss of reflexes and coma may occur. In extreme cases death from respiratory arrest may occur. Repeated exposures to small amounts of this material may result in malaise, weakness, anorexia, etc. Contact with CYFLUTHRIN in this preparation may result in skin irritation, itching rash, and tingling or burning sensation. Irritation of mucous membranes in the upper respiratory tract may occur from inhalation of dust.
CYPERMETHRIN	AMMO WSB, 2.5EC; CYMBUSH 3E	High - Class I, Moderate - Class II and Low - Class - III (*) - RUP	Cabbage, onions, spinach, lettuce	Slight skin or eye irritant, may cause allergic skin reactions. High dermal exposure symptoms include numbness, tingling and burning sensations, itching, loss of bladder control, incoordination and seizures. Death is possible. Symptoms of high dose ingestion include nausea, vomiting, stomach pain and diarrhea which progresses to convulsions, unconsciousness and coma. CYPERMETHRIN has been classified by EPA as a possible human carcinogen (animal studies).
DIAZINON	DIAZINON 50W, AG500, G14, 4E	Low - Class III- RUP	Cabbage, peaches, apples, sugar beets, spinach, sweet corn, cucumbers, cantaloupes, cherries, pears	Symptoms of dermal exposure include headache, blurred vision, pinpoint pupils, weakness, nausea, excessive salivation, sweating, vomiting, diarrhea and abdominal cramps. Severe overexposure may cause irritation of eyes, nasal passages, throat and skin convulsions, possible cardiac arrest and death. DIAZINON AG-500 contains AROMATIC PETROLEUM SOLVENTS, which can cause similar symptoms following inhalation of vapor. Exposure to very high levels may cause kidney or liver damage. 50W may contain some CRYSTALLINE SILICA, which can cause lung damage and cancer.

DICOFOL	KELTHANE 35W,MF	Moderate - Class II and Low - Class III	Apples, beans, pears	Eye contact can cause conjunctivitis. Symptoms from ingestion and inhalation include nausea, dizziness, weakness and vomiting. Skin exposure causes irritation or rash. Overexposure by any route may cause nervousness, headaches, nausea, vomiting and fatigue. Very severe cases may result in convulsions, coma or death from respiratory failure. Liver, heart and kidney damage possible on repeated overexposure.
DIMETHOATE	CYGON 25W, 400; DIMETHOATE 267, 25W, 2.67E, 400, 4EC	Moderate - Class II and Low- Class III (*)	Cabbage, potatoes, apples, beans, spinach, cucumbers, cantaloupes, lettuce	Moderately toxic by ingestion, inhalation and dermal absorption. May cause irritation of eyes, nasal passages, throat and skin. Symptoms of DIMETHOATE exposure include headache, blurred vision, pinpoint pupils, weakness, nausea excessive salivation, sweating, vomiting, diarrhea and abdominal cramps. Severe overexposure may lead to muscular fibrillation, pulmonary edema, convulsions, possible cardiac arrest and death.
DISULFOTON	DI-SYSTON 15G, 8, 8E	High - Class I - RUP	Cabbage, potatoes, beans	Inhalation, dermal absorption or ingestion may result in systemic intoxication, with early symptoms like nausea, salivation, lacrimation, blurred vision and constricted pupils, and later symptoms such as vomiting, diarrhea, abdominal cramps, dizziness, sweating, confusion, slurred speech, convulsions, low blood pressure and cardiac irregularities, loss of reflexes and coma. Death may occur in extreme cases. Some of these symptoms can be caused by AROMATIC HYDROCARBON SOLVENTS. DI-SYSTON 15% contains CRYSTALLINE SILICA, which can cause lung damage and cancer.
ENDOSULFAN	ENDOSULFAN; THIODAN 3E, 3EC, 50W,200 EC,2 C.O.EC, CO, WSB ; ENDOCIDE 3E; PHASER 3EC,50 WP 50 WSB	High - Class I	Cabbage, potatoes, peaches, apples, sugar beets, beans, spinach, sweet corn, cucumbers, cantaloupes, lettuce, cherries, pears	Slight skin and eye irritant. Overexposure or accidental ingestion can cause vomiting, agitation, convulsion, shortness of breath, dizziness, vertigo, weakness, irritability, headaches, etc. Can be fatal if swallowed, inhaled or absorbed through skin.
ENDOSULFAN +PIPERONYL BUTOXIDE+ PYRETHRINS	THIRETHRIN	Moderate - Class II	Beans	Overexposure may cause nausea, vomiting, diarrhea, dizziness, weakness, headaches. May cause skin and eye irritation. May aggravate preexisting skin or respiratory condition.

ESFENVALERATE (S-FENVALERATE)	ASANA XL, 0.66 XL	Moderate - Class II- RUP	Cabbage, sugar beets, peaches, potatoes, carrots, apples, beans, sweet corn, cucumbers, cantaloupes, lettuce, cherries, pears	Skin overexposure may cause transient burning or pricking sensation and rash. High dose inhalation or ingestion symptoms (animal studies) include tearing, blurred vision, dizziness, burning, itching, convulsions , breathing difficulties, etc. Individuals with preexisting diseases of liver, kidneys, bone marrow and peripheral nervous system may have increased susceptibility to high level exposures.
ETHION	ETHION 25W	Moderate - Class II	Apples, pears	Moderately toxic if swallowed, inhaled or absorbed through the skin. Acute overexposure symptoms include headache, weakness, nausea, abdominal cramps, excessive salivation, perspiration, blurred vision, tearing, pinpoint pupils, convulsions, tremors and coma. Skin exposure may cause contact burns.
ETHOPROP	MOCAP EC, 10G,15G	High -Class I - RUP, and Moderate-Class II	Potatoes, sweet corn	Poisonous if swallowed, inhaled or absorbed through skin. Skin irritant, causes redness and swelling. Severe exposure symptoms include nausea, vomiting, diarrhea, dizziness, salivation, incontinence, pinpoint pupils, blurred vision, respiratory difficulties, convulsions, coma. Death is possible. MOCAP 10G contains CRYSTALLINE SILICA, which could cause lung damage and cancer.
FENBUTATIN OXIDE	VENDEX 50W	High -Class I- RUP	Peaches, apples, cherries, pears	Fatal if inhaled, harmful if swallowed, may cause skin irritation and eye damage. Data on symptoms based on animal studies. Ingestion may cause nausea, headache or weakness; high exposure may lead to abnormal kidney function. Inhalation may irritate respiratory tract causing cough and shortness of breath. Individuals with preexisting disease of the lungs may be more susceptible to the toxicity of excessive exposures.
FONOFOS	DYFONATE II 15G, 10G, 20G, 4EC	High -Class I- RUP and Moderate - Class II (*)	Potatoes, sugar beets	Highly toxic via oral and dermal routes, moderately toxic by inhalation. Early symptoms include blurred vision, headache and dizziness. Skin contact often brings about sweating and muscle twitching. Eye contact causes tearing, pain and blurring of vision. Ingestion may cause nausea, abdominal cramps and diarrhea. Other symptoms include difficult breathing, excessive salivation, incontinence, convulsions and coma. Death resulting from high exposures is often due to respiratory arrest.

FORMETANATE HYDROCHLORIDE	CARZOL 92SP	High - Class I	Peaches, apples, cherries, pears	Fatal if swallowed; can cause irreversible eye damage. Moderate skin irritant; may cause skin sensitization. Toxic by inhalation. Some symptoms are : nausea, vomiting, abdominal cramps, blurred vision, diarrhea, excessive salivation, sweating, tremors, dizziness, etc. May aggravate pre-existing condition of eyes and respiratory system.
HEXYTHIAZOX	SAVEY 50W	Nontoxic - Class IV	Pears	May irritate eyes, nose, throat and skin. May be harmful if inhaled, swallowed or absorbed through the skin. Avoid breathing dust. Avoid contact with skin, eyes or clothing.
IMIDACLOPRID	ADMIRE 2F, PROVADO 1.6F	Low - Class III	Cabbage, potatoes, apples, spinach, lettuce, pears	Harmful if swallowed or absorbed through skin. Mildly toxic by oral and dermal routes (animal studies). Some exposure symptoms are fatigue, twitching, cramps and muscle weakness.
LAMBDA CYHALOTHRIN	WARRIOR 1E	Moderate - Class II - RUP	Cabbage, onions, sweet corn, lettuce	Mild eye and skin irritant (animal studies). Skin exposure may cause a transient burning or prickling sensation usually around the mouth and eyes, but may involve the arms and hands.
MALATHION	MALATHION EG, 57EC, 8E, 5EC, ULV ; CYTHION 57%, 8LB, 8E	Moderate Class II and Low - Class - III	Sugar beets, beans, cherries	Eye irritant. Absorbed by skin and mucous membranes. Some symptoms are numbness, tingling sensation, incoordination, headache, dizziness, tremors, nausea, abdominal cramps, sweating, blurred vision, difficult breathing, etc. Very high doses can cause unconsciousness, incontinence and convulsions.
METAMIDOPHOS	MONITOR 4	High - Class I - RUP	Cabbage, potatoes	Inhalation, dermal absorption or ingestion may result in systemic intoxication. Early symptoms include nausea, increased salivation, lacrimation, blurred vision and constricted pupils, followed by vomiting, diarrhea, abdominal cramps, dizziness, sweating, tightness of chest, wheezing and laryngeal spasms. In severe cases there may be convulsions, low blood pressure, loss of reflexes, coma, and cardiac irregularities. Death may occur due to respiratory arrest and other factors in extreme cases. Complete symptomatic recovery from sublethal poisoning usually occurs after one week following removal of the exposure source. Chronic effects may result from repeated exposure to small amounts, with symptoms such as malaise, weakness and anorexia.

METHIDITHION (METHADITHION)	SUPRACIDE 2E	High - Class I - RUP	Apples	May be fatal if swallowed or inhaled, harmful if absorbed through the skin. Moderate eye irritant. Symptoms of poisoning include: headaches, dizziness, blurred vision, weakness, nausea, diarrhea, cramps, chest discomfort, nervousness, sweating, pinpoint pupils, tearing, salivation, convulsions, coma, incontinence, etc.
METHOMYL	LANNATE SP, 9S, L, V, WSP, 2.4LV, 1.8 LV, SP	High - Class I - RUP	Cabbage, peaches, onions, carrots, apples, sugar beets, beans, spinach, sweet corn, cucumbers, cantaloupes, lettuce, cherries	Toxic by skin, eye, inhalation or ingestion exposure. Some symptoms include skin and eye irritation, blurred vision, tearing, wheezing, headaches, nausea, muscle incoordination, slurred speech, weakness, abdominal cramps, chest discomfort, pinpoint pupils, etc. Individuals with preexisting conditions of central nervous system may have increased susceptibility to exposure.
METHOXYCHLOR	MARLATE 50	Low to Nontoxic - Classes III to IV	Beans	Slightly irritating to skin. Heavy exposure may cause fatigue and aplastic anemia. Can cause liver and kidney damage.
METHYL PARATHION	METHYL PARATHION 7.5, 4E, 4LB, LB ; PENNCAP M	High - Class I- RUP and Moderate - Class II - RUP (*)	Peaches, apples, sugar beets, beans, sweet corn, cherries, pears, potatoes, carrots	Slightly irritating to skin and non-irritating to eyes (animal tests). Symptoms of poisoning may include headache, dizziness, weakness, incoordination, muscle twitching, tremor, nausea, abdominal cramps, diarrhea and sweating.
NALED	DIBROM, DIBROM 8E	High- Class I	Beans, sugar beets	Exposure symptoms include numbness, tingling sensation, incoordination, headache , dizziness, tremors, nausea, abdominal cramps, sweating, blurred vision, respiratory depression, slow heart beat. Severe overexposure may result in unconsciousness, incontinence, convulsions, cardiac arrest and death. Irritant of skin and mucous membranes. Corrosive to eyes: may cause eye damage.
OXAMYL	VYDATE L	High - Class I - RUP	Potatoes, apples	Fatal if swallowed or inhaled. May be fatal if absorbed through eyes, harmful if absorbed through skin. Causes irreversible eye damage. Symptoms of OXAMYL poisoning include weakness, blurred vision, headache, nausea, abdominal cramps, chest discomfort, sweating, constriction of pupils, slow pulse, muscle tremors. Other components of VYDATE L such as METHANOL and METHYLENE CHLORIDE can cause dizziness, incoordination, loss of consciousness, etc. METHYLENE CHLORIDE is considered a carcinogen.

OXYDEMETON METHYL	METASYSTOX - R	Moderate - Class II -RUP	Cabbage, sweet corn, lettuce, sugar beets	Dermal absorption or ingestion may result in systemic poisoning. First symptoms may be nausea, increased salivation and lachrymation, blurred vision and constricted pupils. Other symptoms include vomiting, diarrhea, abdominal cramps, dizziness and sweating. If poisoning is severe, weakness, muscle twitching, confusion, ataxia, slurred speech, convulsions, low blood pressure, cardiac irregularities, loss of reflexes and coma may occur. In extreme cases, death may occur. AROMATIC HYDROCARBON SOLVENTS in this product can be irritating to eyes, nose and throat. In high concentration they may cause central nervous system depression. Animal studies revealed potential adverse effects on the testes and overall reproductive performance at high doses.
OXYTHIOQUINOX	MORESTAN 25W	Moderate - Class II	Apples, pears	May cause skin irritation on prolonged contact. Occupational exposure occurs via dermal and respiratory routes from spray application. Product causes substantial but temporary eye injury. May be harmful if inhaled. Avoid contact with skin and clothing.
PERMETHRIN	AMBUSH 2E, 25W POUNCE 3.2E, 25W	Moderate - Class II and Low - Class- III (*) - RUP	Cabbage, peaches, onions, potatoes, apples, spinach, sweet corn, cucumbers, cantaloupes, lettuce, cherries, pears	Effects of overexposure result from inhalation, swallowing or contact with skin and eyes. Symptoms include : diarrhea, salivation, tremors, convulsions, hyperactivity and hypersensitivity. Occasionally , contact has produced temporary skin sensations such as numbing, burning and tingling. Some products (AMBUSH) contain XYLENE , which can produce symptoms such as drowsiness, dizziness, incoordination, fatigue, headache, gastrointestinal disturbances and mucous membrane irritation.
PHORATE	THIMET 20G, 15G ; PHORATE 20G; RAMPART 10G	High - Class I- RUP	Potatoes, sugar beets, beans, sweet corn	Can be absorbed through eye exposure or inhalation. Symptoms include weakness, headache, tightness in chest, blurred vision, pinpoint pupils, salivation, sweating, nausea, vomiting, diarrhea and abdominal cramps, skin and upper respiratory tract irritation. May cause allergic skin reaction, and could aggravate preexisting skin condition. May be harmful or fatal if swallowed or inhaled. Inhalation of dust may aggravate preexisting respiratory condition.

PHOSMET	IMIDAN 50W, 70W	Moderate - Class II	Peaches, apples, cherries, pears, potatoes	Harmful if ingested, inhaled or absorbed through skin, or if it comes in contact with the eyes. Symptoms include numbness, tingling sensation, headaches, incoordination, dizziness, tremor, nausea, vomiting, abdominal cramps, salivation, sweating, twitching, tremors, blurred vision, tearing, diarrhea, chest discomfort, etc.
PYRETHRIN + PIPERONYL BUTOXIDE	PYRENONE	Low - Class III	Spinach	Harmful if swallowed, inhaled or absorbed through skin. May cause severe allergic reactions. High level inhalation may cause asthmatic breathing, sneezing, nasal stuffiness, headache, nausea, vomiting, incoordination, tremors, burning and itching, convulsions.
PYRIDABEN	PYRAMITE 60WSB	Moderate - Class II	Apples, pears	May be fatal if inhaled. Do not breathe dust or spray mist. PYRAMITE contains CRYSTALLINE SILICA which can cause lung damage and cancer.
ROTENONE	MANY PRODUCTS	High-Class I; Moderate-Class II; Low- Class III (*) . Some products are RUP	Potatoes	May be harmful if swallowed, absorbed through skin or inhaled. Direct contact may cause irritation of the skin or conjunctiva. Ingestion produces digestive tract irritation, nausea and vomiting. Inhalation of dust can cause respiratory stimulation followed by depression and convulsions. Large overdoses can cause vomiting, respiratory depression and hypoglycemia.
TEBUFENOZIDE	CONFIRM 2F	Low - Class III	Cabbage	Primary routes of exposure are inhalation, skin and eye contact. Inhalation of vapor or mist could be harmful. Direct eye contact could cause irritation. Prolonged or repeated skin contact can cause slight skin irritation. Repeated overexposure to the active ingredient can cause reproductive effects and blood changes.
TERBUFOS	COUNTER 15G, 20CR	High - Class I - RUP	Sugar beets, sweet corn	Highly toxic by dermal and oral routes. Symptoms of acute toxicity may include nausea, abdominal cramps, vomiting, salivation, excessive sweating, diarrhea, chest tightness, wheezing, blurred vision, fatigue, headache, slurred speech, confusion. High doses can lead to respiratory arrest and death. These formulations contain more than 0.1% CRYSTALLINE SILICA, which can cause lung damage and cancer.

THIODICARB	LARVIN 3.2, DF WSP	Moderate - Class II	Cabbage, spinach, lettuce	May be fatal if swallowed, harmful if inhaled or absorbed through skin. May be irritating to eyes and cause mild skin sensitization. Overexposure symptoms include salivation, muscle tremors, nausea, watery eyes, difficult breathing, vomiting, pinpoint pupils, excessive sweating, diarrhea, blurred vision, abdominal cramps, weakness, headaches, convulsions, etc.
ZETA CYPERMETHRIN	MUSTANG 1.5 EW, 1.5 EC	Moderate - Class II	Cabbage, onions, lettuce	May be fatal if swallowed. Effects of overexposure result from swallowing or inhaling. Overexposure symptoms include salivation, tremors, convulsions, incoordination, and reversible numbing, burning or tingling sensations.

(*)- Variable depending on product, crop or route of entry (ingestion, inhalation, etc.). Check product label.

WORKER PROTECTION STANDARDS RESOURCE MATERIALS

The information about the pesticides and commercial products used on minor Colorado crops is taken from the following publications of Colorado State University - Fort Collins, CO 80523:

HIGH PLAINS INTEGRATED PEST MANAGEMENT GUIDES (1998, updated to 2001).

CROP PROFILES - COLORADO AGRICULTURE CROPPING SYSTEMS AND PEST ISSUES (1997 data).

2000 COLORADO WEED MANAGEMENT GUIDE.

COLORADO TREE FRUITS- PESTS AND CROP MANAGEMENT GUIDE (1997, updated to 1999).

Much of the information on pesticides and exposure symptoms is taken from several data bases such as

EXTOXNET PESTICIDE INFORMATION PROFILES
ace.orst.edu/info/extoxnet/ghindex.html

TOMES / MICROMEDEX ENVIRONMENTAL HEALTH AND SAFETY SERIES
INTERACTIVE WWW system
csi.micromedex.com

PESTICIDE ACTION NETWORK (PAN) PESTICIDE DATABASE.
www.pesticideinfo.org

MATERIAL SAFETY DATA SHEETS (MSDS)
www.ilpi.com/msds/index.html#Pesticides

EPA PESTICIDE PRODUCT LABEL SYSTEM.
oaspub.epa.gov/pestlabl/ppls.home

Information about (1) Restricted Use Pesticides (RUP) ,(2) the carcinogenic potential of pesticides, and (3) the health effects of different classes of pesticides, comes from several EPA publications:

RESTRICTED USE PRODUCTS (RUP) REPORTS
www.epa.gov/RestProd/

OFFICE OF PESTICIDE PROGRAMS (OPP) LIST OF CHEMICALS EVALUATED FOR CARCINOGENIC POTENTIAL.
www.epa.gov/pesticides/carlist/

RECOGNITION AND MANAGEMENT OF PESTICIDE POISONINGS- FIFTH EDITION (1999)

Other useful information was obtained from the following sources:

HOW TO READ AND UNDERSTAND A PESTICIDE LABEL
Professional Training Seminars
Professional Applicator Institute

• FARM CHEMICAL HANDBOOK (2002 edition)

- WORKER PROTECTION STANDARD PRODUCT LABEL- QUICK REFERENCE GUIDE
 - published by the Van Dienst Supply Co. , Webster City, Iowa.

Additional information and materials concerning the Worker Protection Standard are available by contacting EPA's Occupational Safety Branch at (703) 305-7666.

"THE WORKER PROTECTION STANDARD FOR AGRICULTURAL PESTICIDES - HOW TO COMPLY"-
140 page manual detailing compliance, exceptions, restrictions, etc.

"HOW TO COMPLY - QUICK REFERENCE GUIDE" - Poster listing WPS requirements.

"WORKER HANDBOOK"- 50 page training manual for agricultural workers.

HANDLER HANDBOOK" - 60 page training manual for pesticide handlers.

IMPORTANT EMERGENCY TELEPHONE NUMBERS

NATIONAL PESTICIDE INFORMATION CENTER (NPIC):
(800) - 858- 7378.

ROCKY MOUNTAIN POISON & DRUG CENTER: (800)- 332- 3073.

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FAX: 1- 913 - 551- 7270
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