



Module 11

# Fumigant Reregistration

# EPA Approved Handler Training Certification

## Safety Information for Handlers of Pesticide Soil Fumigants

The U.S. Environmental Protection Agency requires that certified applicators provide safety information to handlers of soil fumigants. Providing this information to handlers in a manner they can understand meets this obligation.

### How do I know if I am a handler?

You are a handler if you are in an application block and/or buffer zone and your work involves:

- Assisting with applications
- Cleaning up spills
- Handling or disposing of containers
- Using, cleaning, adjusting, or repairing equipment that may have residue
- Installing, operating, repairing, or reworking irrigation equipment
- Shoveling soil
- Installing, perforating, removing, repairing, or monitoring traps
- Monitoring air concentrations
- Doing any crop advisor and/or other Worker Protection Standard (WPS) handler activities

### What are soil fumigants?

Soil fumigants are pesticides that...

- are applied as a gas, or form a gas shortly after application,
- move through the soil to kill pests, and
- give off gas into the air around treated areas.

### What are the common active ingredients in soil fumigants?

- Methyl bromide
- Chloropicrin
- Metham sodium (Yagan)
- Miteox posacon (30-Fac)
- Dazomet (Basamid)
- 1,1-Dichloroethane (Telone)
- Indoxiflufen (Nidax)
- Dicoethyl disulfide (DIDSD) (Paladia)

### What are the signs and symptoms of exposure?

You may have been exposed to a soil fumigant if you experience signs and symptoms such as:

- Watery, burning, or irritation of the eyes, nose, or mouth membranes
- Headache, nausea, or dizziness
- Tremors, slurred speech, or loss of muscle coordination, and/or
- A skin rash, burning and/or blistering

*Only trained handlers can assist with and apply soil fumigants.*

### What should I do if I have signs or symptoms of exposure?

If you experience signs or symptoms of exposure:

- **STOP** working immediately.
- **INFORM** your supervisor or employer and let them know if you need medical attention.
- **LEAVE** the area and
- **NOTIFY** upwind.

Return to work only when your employer or supervisor tells you it is safe. Your supervisor may have you wear a respirator and go back to work. If you still experience symptoms while wearing the respirator, **STOP WORKING**.

You may go back to work only when the:

- Symptoms go away,
- Cartridge in the respirator has been changed, and
- Measured air concentrations are below the trigger level.

### How can I prevent exposure?

**Before a pesticide application:**

- Read the entire label, especially the first aid and emergency procedures.
- Ask where to find the Fumigant Management Plan. It will have information about safety precautions and what to do if there is an emergency at your site.
- Be familiar with first aid procedures.
- Know where to find a telephone and phone number for medical help.

**During a pesticide application:**

- Always wear the proper Personal Protective Equipment (PPE) as listed on the label.

### Requirements and responsibilities for handlers

**Before working with soil fumigants, handlers must:**

1. Be trained on the use of fumigation equipment.
2. Know first aid and emergency procedures, escape routes, and emergency contact information.
3. Read and follow the directions on the label. **THE LABEL IS THE LAW.** It has information for physicians and requirements for:
  - safe handling
  - symptoms of exposure
  - first aid
4. Use the PPE listed on the label. If you use a respirator, be fit tested, trained on proper use, and healthy enough to wear it.
5. Be trained as a handler according to the requirements of the WPS. The information in this brochure alone does not satisfy handler training required by the WPS.

Contact your state pesticide regulatory agency to see if your state has additional requirements.

**If you think that you or someone else may have gotten ill from exposure during or after the application of a fumigant, provide the following information to the applicator in charge of the fumigation and/or to the doctor:**

- The name of the person who is ill
- The applicator's name (if it isn't the applicator in charge)
- Where and when the exposure occurred
- What happened?
- Symptoms of illness
- Name of the fumigant product, active ingredient, or EPA registration number

Welcome to Module 11, EPA Approved Handler Training Certification.

The content of this module is designed to serve as a training tool for handlers involved directly in the application of a soil fumigant or assisting with any other crop production practice within the field or buffer zone during the buffer zone period.

The new fumigant labels require all handlers receive additional training from the certified applicator before participating in any field fumigation. EPA has recently published *“The new Safety Information for Handlers of Soil Fumigants”* which is meant to serve as a printed handout to meet the additional handler information certification requirement on all of the new fumigant labels. It is not meant to replace other, more comprehensive registrant training guides for handlers participating in field fumigation activities. Fumigant Registrants are also providing this training information through their own handouts or through other channels open to the public such as an internet website. Employers and or applicators are encourage to review and use this additional resource as part of their own on-farm handler training programs. Applicators supervising fumigations must ensure that the Fumigant Management Plan includes how and when this required training information was provided to the handlers under their supervision.

In general, Module 11 will discuss EPA approved handler training information consisting of 8 separate educational components, including the following elements: (1) How I know if I am a Handler; (2) what fumigants are and how they work, (3) safe application and handling of soil fumigants, (4) air monitoring and respiratory protection requirements for handlers, (5) early signs and symptoms of exposure, (6) appropriate steps to take to mitigate exposures, (7) what to do in case of an emergency, and (8) how to report incidents. Each of the 8 components will be discussed individually in subsequent slides.



Only trained handlers can assist with and apply  
soil fumigants.

**Safety Information for Handlers of Pesticide Soil  
Fumigants**

The U.S. Environmental Protection Agency requires that certified applicators provide safety information to handlers of soil fumigants. Providing this information to handlers in a manner they can understand meets this obligation

With EPA reregistration of the soil fumigants and with the appearance of new product labels, applicators supervising a soil fumigation will now be required to provide EPA-approved Safety training information to handlers working with any of the Pesticide Soil Fumigants. Employers and or certified applicators will be required to provide this information in a manner that handlers can understand **prior** to performing any fumigant handling tasks in the field, or applicators must ensure that the handler has been provided the required information within the proceeding 12 months. In this regard, it should be clear that **ONLY TRAINED HANDLERS CAN ASSIST WITH AND APPLY SOIL FUMIGANTS** in the field. It should also be recognized that Applicators supervising fumigations must ensure the Fumigant management plan for that days fumigation activity includes a description of how and when the required training information was provided to the handlers under their supervision.

### EPA Approved Handler Training Certification




### *How do I know if I am a handler?*

- You are a handler if you are in an application block and/or buffer zone and your work involves:
  - Assisting with applications
  - Cleaning up spills
  - Handling or disposing of containers
  - Using, cleaning, adjusting, or repairing equipment that may have residues
  - Installing, operating, repairing, or removing irrigation equipment
  - Shoveling soil
  - Installing, perforating, removing, repairing, or monitoring tarps
  - Doing any crop advisor and/or other Worker Protection Standard (WPS) handler activities

The new EPA approved handler training information which the certified applicator must present, must clearly define which workers in the field are handlers and who are not. In general, the following activities are prohibited from being performed in the fumigant application block or surrounding buffer zone during the buffer zone period by anyone other than persons who have been appropriately trained and equipped as handlers in accordance with the requirements in the WPS (section 40 Code of Federal Regulations Part 170), from the start of the application until the entry-restricted period ends.

In this regard, EPA defines handlers as any person in the application and or Buffer zone that is involved in an activity which includes :

- any person Participating in the application as a supervisor, loader, driver, tractor co-pilot, a shoveler, cross ditcher, or as any other person direct participating in the application from the time the application begins, such as when the fumigant is first introduced into the soil and ends after the fumigant has stopped being delivered or dispensed to the soil);
- It includes any person using devices to take air samples to monitor fumigant air concentrations;
- Persons cleaning up fumigant spills (It should be understood that This does not include emergency personnel who are not associated with the fumigation application);
- the definition includes Persons Handling or disposing of fumigant containers;
- Cleaning, handling, adjusting, or repairing any fumigation equipment that may contain fumigant residues;
- it includes People responsible for Installing, repairing, or operating irrigation equipment in the fumigant application block or surrounding buffer zone during the buffer zone period;
- or those Entering the application site or surrounding buffer zone during the buffer zone period to perform scouting, crop advising, or monitoring tasks;
- Finally, a handler is any person charged with Installing, perforating (cutting, punching, slicing, poking), removing, repairing, or monitoring the plastic mulch bed covers or tarps:

## EPA Approved Handler Training

### *What are soil fumigants?*

Soil fumigants are pesticides that

- Are applied as a gas or form a gas shortly after application.
- Move through the soil to kill pests, and
- Give off gas into the air around treated areas.



Any Handler directly participating in a soil fumigation activity should be informed that a soil fumigant is a toxic pesticide product that is applied to soil as a liquid prior to planting, that then converts from a liquid to form a volatile gas. As a gas, it is able to diffuse through open pore space throughout the soil (bed) to provide soilborne pest and disease control. With time, fumigant gases can move upwards in soil, through the plastic mulch covering and then into the atmosphere above the plastic. Winds can then move fumigant gasses that have moved through the plastic, off-site to neighboring areas and residential properties. Inhalation and direct contact with skin are the most common ways handlers become exposed to the fumigants, when it occurs.

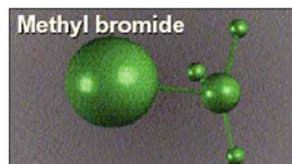
As the picture illustrates, Fumigants are stored and sold in large steel cylinders or PIGS, where in the field each cylinder is pressurized with nitrogen gas so as to propel the fumigant into the soil.

When used as a pre-plant soil fumigant in an agriculture field or into greenhouse soil, gases of the soil fumigants move outward from the point of injection to encounter and control a variety of weeds, nematodes, insects, and various soil borne disease pathogens.

## EPA Approved Handler Training Certification

### *What are the common active ingredients in soil fumigants?*

- Methyl bromide
- Chloropicrin
- Metam sodium (Vapam)
- Metam potassium (K-Pam)
- Dazomet (Basamid)
- 1,3-Dichloropropene (Telone)
- Iodomethane (methyl iodide) (Midas)
- Dimethyl disulfide (DMDS) (Paladin)



In general, those soil fumigants which are used in commercial agriculture include 1 of 8 different active ingredients. The 8 active ingredients include methyl bromide, chloropicrin, Metam sodium or Vapam, Metam potassium or K-Pam, Dazomet, 1,3-Dichloropropene or Telone, Iodomethane or methyl iodide, and Dimethyl disulfide or DMDS.

Different active ingredients are needed to provide a level of broad spectrum control of different pests, which is why some fumigants are often applied together in an agricultural field. In general methyl bromide has proved to be very effective against a wide range of soilborne pests including nematodes, diseases, and weeds. Iodomethane (Methyl iodide), has shown similar broadspectrum pest control activity as that of methyl bromide.

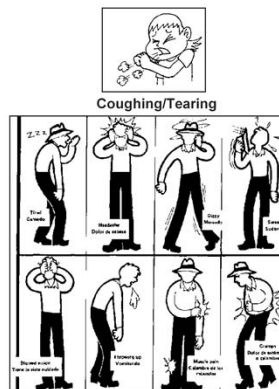
Chloropicrin has proved very effective against diseases but seldom nematodes or weeds. 1,3-dichloropropene (Telone) is an excellent nematicide but generally performs poorly against weeds and diseases. Bacterial pathogens are generally not satisfactorily controlled by any of the different active ingredients. Metam sodium and metam potassium and Dazomet has demonstrated activity against weeds, nematodes and disease. Dimethyl disulfide (DMDS), a new fumigant now appearing in the commercial marketplace, has also proved effective against weeds, nematodes, and disease.

## EPA Approved Handler Training Certification

### What are the signs and symptoms of exposure?

You may have been exposed to a soil fumigant if you experience signs and symptom such as:

- Watering, burning, or irritation of the eyes, nose, or mucus membranes
- Headache, nausea, or dizziness
- Tremors, slurred speech, or loss of muscle coordination; and / or
- A skin rash, burning and / or blistering of skin



Handlers should be informed that All of the active ingredients which comprise the different soil fumigants are considered human toxins and can cause serious injury to handlers who inhale toxic concentrations of gases in the air or those they come in direct liquid contact with. Any handler participating in the application of a soil fumigant or in a field before the buffer zone period has expired should recognize the signs and symptoms of fumigant exposure.

As a Handler you may have been exposed to a soil fumigant if you experience signs or symptoms such as:

- Watering, burning, or irritation of the eyes, nose, or mucus membranes
- experience Headache, nausea, or dizziness
- Tremors, slurred speech, or loss of muscle coordination; and / or
- A skin rash, burning and / or blistering of the skin

## EPA Approved Handler Training and Certification

### What should I do if I have signs or symptoms of exposure?

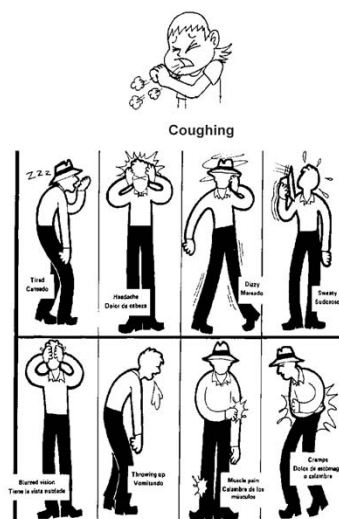
If you experience signs or symptoms of exposure:

- **STOP** working immediately
- **INFORM** your supervisor or employer and let them know if you need medical attention,
- **LEAVE** the area, and
- **MOVE** upwind.

Return to work only when your employer or supervisor tells you it is safe. Your supervisor may have you wear a respirator and go back to work. If you still experience symptoms while wearing the respirator, **STOP WORKING**.

You may go back to work only when the:

- Symptoms go away
- Cartridges in the respirator has been changed
- Measured air concentrations are below the trigger level



It has been demonstrated that Handlers who believe they are experiencing symptoms of pesticide exposure are more likely to link their symptoms to the pesticide and take steps to receive appropriate treatment if they have been informed what they should do if they have signs and symptoms of exposure. As part of the new Handler Training information, the certified applicator charged with supervision of the days fumigation must assure that handlers understand that if they experience any signs or symptoms of exposure that they:

- **STOP** working immediately
- **INFORM** your supervisor or employer immediately and let them know if you need medical attention,
- **LEAVE** the area, and immediately
- **MOVE** upwind.

Handlers should only return to work only when the certified applicator or your employer or supervisor tells you it is safe. Your supervisor may have you wear a respirator and go back to work. If you still experience symptoms while wearing the respirator, do not hesitate, **STOP WORKING**.

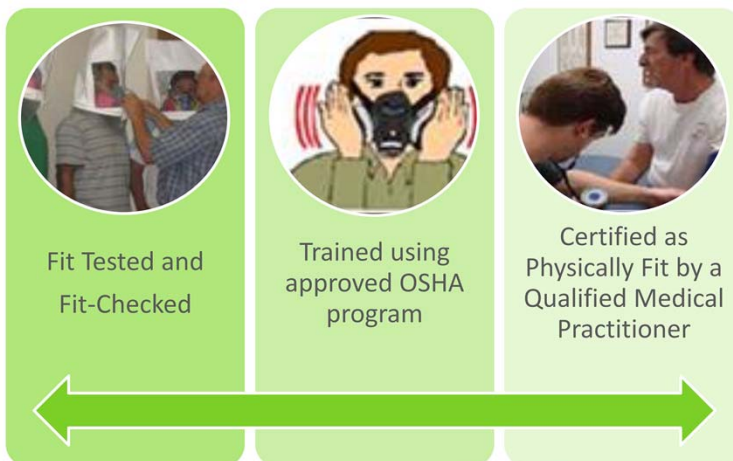
As a handler, You may go back to work only when the:

- Symptoms go away,
- Cartridges in the respirator have been changed, and
- if air concentrations of the fumigants are measured to be at levels below the trigger level which requires all handlers to exit the field.



## EPA Approved Handler Training Certification

Handlers who are asked by Supervisors to use a respirator must be annually certified as being:



In some situations fumigant odors in the field or concentrations of the fumigant in the air during or after the fumigation may attain elevated levels which causes sensory irritation to the handler. IF and When sensory irritation occurs, handlers are expected to notify there supervisor, who may then ask you to wear a respirator. Handlers who are asked by supervisors or applicators in charge of the fumigation to wear a respirator **must be Annually certified** as being:

- Fit Tested and Fit-Checked by a certified evaluator
- Trained in the use of a respirator using an OSHA approved training program
- Certified as being Physically Fit by a qualified Medical practitioner.

Certification may be acquired either via official office visit or via approved internet medical survey. For all requirements listed, the dates of certification must be entered by the certified applicator to the fumigant management plan to insure certified training has been achieved in the previous 12 months. Handlers who have not completed all of the certification within the previous 12 months cannot be required to wear a respirator.

## EPA Approved Handler Training Certification

### *How can I prevent exposure?*

*Before* a pesticide application, handlers should:

- Read the entire label, especially the first aid and emergency procedures.
- Ask where to find the Fumigant Management Plan. It will have information about safety precautions and what to do if there is an emergency at your site.
- Be familiar with first aid procedures
- Know where to find a telephone and phone number for medical help.



*During* a pesticide application:

- Always wear the proper Personal Protective Equipment (PPE) as listed on the label.

Handlers who participate in Fumigant applications should not only understand the symptoms of exposure but also the ways and means in which to prevent exposure.


**Before** a pesticide application, Handlers should....

- Read the entire label, especially the first aid and emergency procedures section.
- They should Ask the certified applicator where to find the Fumigant Management Plan, since It will contain information about safety precautions and provide specific information about what to do if there is an emergency at the field site.
- Handler should also be familiar with first aid procedures, particularly those listed on the label of the fumigant in use within the field.
- Handlers should Know where to find a telephone and the phone numbers for needed to contact medical help.

**During** a pesticide application: Handlers should Always wear the proper Personal Protective Equipment (PPE) as listed on the fumigant label.

Observance of these procedures by handlers should help to prevent problems of fumigant exposure in the field.

## EPA Approved Handler Training Certification



Handlers should contact their state pesticide regulatory agency to see if their state has additional requirements.

Requirements and Responsibilities for handlers. Before working with soil fumigants, handlers must:

1. Be trained on the use of fumigation equipment.
2. Know first aid and emergency procedure, escape routes, and emergency contact information.
3. Read and follow the directions on the label. The label is the law. It has information for physicians and requirements for:
  - Safe handling
  - Symptoms of Exposure
  - First Aid
4. Use the PPE listed on the label. If you use a respirator, you must be fit-tested, trained on proper use, and healthy enough to wear it.
5. Be Trained as a handler according to the requirements of the WPS. The information in this document alone does not satisfy all of the handler training required by the WPS.

**As part of a summary for this EPA Approved Handler Training Certification module, Handlers need to be instructed that they too have certain Requirements and Responsibilities prior to, during, or after a fumigant application.**

Before working with soil fumigants, handlers must:

1. Insure that they have been trained on the use of any fumigation equipment
  2. They should Know first aid and emergency procedures, escape routes, as well as have emergency contact information in the event that it is needed.
  3. They should read and follow all of the directions required for fumigant use on the label, particularly since **THE LABEL IS THE LAW**. The label has information for physicians and requirements for:
    - Safe handling of the fumigant
    - descriptions of the various Symptoms of Exposure
    - and the types of First Aid which should be administered.
  4. The handler should be provided and Use the PPE listed on the Label. If you use a respirator, remember that you must be fit-tested, trained on proper use, and certified to be healthy enough to wear it.
  5. Finally, you must Be trained as a handler according to the requirements of the WPS, recognizing that The information in this training program alone does not satisfy all of the handler training required by the WPS.
- If Handlers have any other questions or concerns, they should contact their state pesticide regulatory agency to see if their state has additional requirements.

## EPA Approved Handler Training Certification

• If you think that you or someone else may have gotten ill from exposure during or after the application of a fumigant, provide the following information to the applicator in charge of the fumigation and/or to the doctor.

- The name of the person who is ill
- The applicators name (if it isn't the applicator in charge)
- Where and when the exposure occurred
- What Happened
- Symptoms of illness
- Name of the fumigant product active ingredient or EPA registration number

Finally and as a conclusion of this Handler Training Certification module 11, certified applicators in charge of the fumigation are required to instruct handlers on what to do in the case of a medical emergency occurring within the field or even at home after a days fumigation. In this regard, handlers should be instructed on what to do and know what kinds of information needs to be assembled to describe an incident of fumigant exposure.

If you as a handler suspect or know that you, another handler, or another person has been exposed to a fumigant and are experiencing the signs and symptoms of fumigant exposure, you should stop all work and contact your supervisor or the applicator in charge of the fumigation and or the doctor, and provide them with the following information:

- The name of the person who is ill
- The applicators name (if it isn't the applicator in charge)
- Where and when the exposure occurred
- a description of What Happened
- Symptoms of illness
- and the Name of the fumigant product, active ingredient and or EPA registration number

This concludes Training module number 11, EPA approved Handler training Certification.

## Module 11 Review Questions

### Questions

1. All handlers must receive additional training from the certified applicator before participating in any field fumigation.

All handlers must receive additional training from the certified applicator before participating in any field fumigation.

True

False

Correct	Choice
X	True
	False

**2. The Fumigant management plan for that days fumigation activity must include a description of how and when the required training information was provided to the handlers under their supervision.**

The Fumigant management plan for that days fumigation activity must include a description of how and when the required training information was provided to the handlers under their supervision.

True

False

Correct	Choice
X	True
	False

3. \_\_\_\_\_ is a pesticides that is applied as a gas or forms a gas shortly after application, moves through the soil to kill pests, and gives off gas into the air around treated areas.

\_\_\_\_\_ is a pesticides that is applied as a gas or forms a gas shortly after application, moves through the soil to kill pests, and gives off gas into the air around treated areas.

Choice

soil fumigant

**4. What are the most common ways handlers become exposed to the fumigants?**

What are the most common ways handlers become exposed to the fumigants?

- Inhalation & direct contact with the skin
- Spills from the tractor that burn through clothes
- Ingestion
- Improper Storage that can cause explosions

Correct	Choice
X	Inhalation & direct contact with the skin
	Spills from the tractor that burn through clothes
	Ingestion
	Improper Storage that can cause explosions



5. Which of the following are symptoms of fumigant exposure? (Check all that apply)

Which of the following are symptoms of fumigant exposure? (Check all that apply)

- Watering, burning, or irritation of the eyes, nose, or mucus membranes
- Experience Headache, nausea, or dizziness
- Tremors, slurred speech, or loss of muscle coordination
- A skin rash, burning and / or blistering of the skin

Correct	Choice
X	Watering, burning, or irritation of the eyes, nose, or mucus membranes
X	Experience Headache, nausea, or dizziness
X	Tremors, slurred speech, or loss of muscle coordination
X	A skin rash, burning and / or blistering of the skin

**6. What should you do if you experience symptoms of fumigant exposure?**

What should you do if you experience symptoms of fumigant exposure?

- Finish the job quickly, inform your supervisor, leave the area, and move upwind.
- Stop working immediately, inform your supervisor, leave the area, and move upwind.
- Finish the job quickly, call the ambulance, leave the area, and move upwind.
- Stop working immediately, call the ambulance, move upwind, and go get a respirator

Correct	Choice
	Finish the job quickly, inform your supervisor, leave the area, and move upwind.
X	Stop working immediately, inform your supervisor, leave the area, and move upwind.
	Finish the job quickly, call the ambulance, leave the area, and move upwind.
	Stop working immediately, call the ambulance, move upwind, and go get a respirator

7. If your supervisor asks you to go back to work after you have experienced symptoms of fumigant exposure, you should be wearing a \_\_\_\_\_.

If your supervisor asks you to go back to work after you have experienced symptoms of fumigant exposure, you should be wearing a \_\_\_\_\_.

- Hazardous Materials Suit
- Hard hat
- Respirator
- Gloves and wool socks

Correct	Choice
	Hazardous Materials Suit
	Hard hat
X	Respirator
	Gloves and wool socks

8. People asked to wear respirators should be \_\_\_\_\_ tested annually.

People asked to wear respirators should be \_\_\_\_\_ tested annually.

- Air
- Breathe
- Fit
- Tight

Correct	Choice
	Air
	Breathe
X	Fit
	Tight

9. During a pesticide application: Handlers should only wear the Personal Protective Equipment (PPE) as listed on the fumigant label if sensory irritation has already been experienced.

During a pesticide application: Handlers should only wear the Personal Protective Equipment (PPE) as listed on the fumigant label if sensory irritation has already been experienced.

True

False

Correct	Choice
	True
X	False

**10. Handlers are not responsible for reading the fumigant label as that is the job of the certified applicator.**

Handlers are not responsible for reading the fumigant label as that is the job of the certified applicator.

True

False

Correct	Choice
	True
X	False

**11. If you get sick because of fumigant exposure, you should give what information to the certified handler? (Check all that apply)**

If you get sick because of fumigant exposure, you should give what information to the certified handler? (Check all that apply)

- The name of the person who is ill
- The applicators name (if it isn't the applicator in charge)
- Where and when the exposure occurred
- A description of What Happened
- Symptoms of illness
- The name of the fumigant product

Correct	Choice
X	The name of the person who is ill
X	The applicators name (if it isn't the applicator in charge)
X	Where and when the exposure occurred
X	A description of What Happened
X	Symptoms of illness
X	The name of the fumigant product