

EXPERIMENT NO: 12

AIM OF THE EXPERIMENT:

To study Fumigating agent & its marketed Product.

THEORY:

It is a technique that employs various chemicals (fumigants) to eliminate pests & insects from homes, buildings & processed goods. The operation is hazardous & all fumigants are harmful to humans to some degree.

A fumigant is a chemical which, at a required temperature & pressure, can exist as a vapor or gas that, when released, penetrates objects or enclosed areas in concentrations that are lethal to pest organisms.

Fumigation techniques have great adaptability in pest control. They can be used to control wood-destroying insects in structures & furniture where liquid or dust formulations are ineffective or where these materials may cause damage. Under some conditions, fumigants can be applied to control burrowing rodents that can't be reached with other types of rodenticides. Most commonly, fumigants are used to control insects & diseases, weed & disease control in soil, commodity fumigations for insects in fresh & stored food products such as grains, fruits, vegetables, nuts & dried fruits & ground burrowing rodent control. Limited fumigations take place to control infestations of wood-destroying insects in structures.

Fumigation may take place in a variety of locations at a customer's home or storage facility or it can occur in a common carrier, such as truck or railway car.

One important factor to consider during fumigation is to take precautionary measures to stay away from the home or area that is being fumigated while the area is still sealed. Don't be in a hurry to return back to your home or place of business, but allow the area to be properly ventilated & cleaned before entering back into the premises. If your home or place of business is experiencing a pest infestation of any kind & requires fumigation services.

TYPES & NATURE OF FUMIGANTS:

Gas Fumigation

It employs fumigants in their gaseous states for pest control. Gas fumigation is performed within enclosed chambers or by enclosing a space with a gas-proof covering.

This method is called space fumigation, ensure toxic fumigants are not dispersed to the external environment. Methyl bromide is a gaseous fumigant that is used to control rodents, termites, insects, nematodes & weeds.

Sulfuryl fluoride is a gas fumigant that is used to control pests in cereal grains, tree nuts & dry fruits. Gas fumigation must only be attempted after an area is cleared of humans & animals.

Solid Fumigation

This system & technique employs solid fumigants for insect control. It is carried out by sprinkling tablets, powders or pellets of measured quantities of fumigants. These are typically easier to use & safer than gaseous fumigants & are less harmful to the environment,

Aluminium Phosphide is a solid fumigant that eliminates pests & insects in all stages of development (eggs, larvae, pupae & adult). It is typically used for pest control in flour, tea, coffee, cotton & grain.

Calcium cyanide is a solid fumigant that reacts with water vapor to form hydrogen cyanide. It

effectively eliminate wide range of pests.

Liquid Fumigation

It employs for mold, pests & insects. Liquid fumigation is carried out by sprayers, which disperse large quantities of liquid over a desire area. Most liquid fumigants are toxic to humans, flammable & volatile. Liquid fumigation acts faster than solid fumigation. It is safe when performed outdoors or within an enclosed fumigation chamber. Examples of liquid fumigants include carbon disulfide, ethyl acetate chloroform, carbon tetrachloride, sulfuryl fluoride, ethylene dichloride & methyl bromide.

CHEMICAL USED FOR FUMIGATION:

Many types of chemicals are used for fumigation. Fumigants are used to control a broad spectrum of pest in many different settings including agriculture work, home pest control & industrial applications. Fumigation chemicals come in both solid & gaseous forms to accommodate a variety of pest control requirements.

Magnesium Phosphide:

It is dark grey solid that is typically used in a powder or granules form. This chemical produces phosphine gas when introduced to moisture or an acid. This highly toxic gas is typically used to fumigate agricultural commodities & to exterminate burrowing pests.

Methyl Bromide:

It is effective fumigants against a wide variety of pests, It is applied in either a gaseous or solid form depending on how & where it is used. Methyl bromide is most commonly used in agriculture settings for pests used as a residential fumigant as recently as 2006.

Sulfuryl Fluoride:

It is a pressurized liquid gas that is typically used for pest control in residential settings. This chemical is also used (less frequently) to control infestations in lumber & automobiles. In addition to being highly toxic in its gaseous state, physical contact with sulfuryl fluoride in its liquid state causes burns & severe skin irritation.

Some Marketed Fumigants are:

- 1 Methyl bromide (meth-o-gas 100)
2. Chloropicrin (chlor-o-Pic)
3. Aluminum phosphide (fumitoxin)
4. Magnesium Phosphide (magtoxin)
5. Sulfuryl fluoride (Vikane)
6. Carbon dioxide.

Application:

While the fumigants is being applied, all persons engaged in or associated with this operation should wear respirators (gas Masks). The only permissible exception to this rule concerns the operators working in the open or in some well ventilated place, under conditions in which any gas that escapes from the equipment is immediately diluted & dissipated. The respirators should not be removed until the workers indoor have reached fresh air, the fumigants has been completely discharged, & all the valves & piping have been closed to that no fumigants can escape from the system. During the application, unauthorized persons should not be allowed to approach or talk to the operators engaged in the discharge of the fumigants.

RESULT: Understood Fumigation Process.