ANTIDOTE

If HCN Gas is inhaled: Break an amyl nitrite pearl in a cloth and hold lightly under nose for 15 seconds. Repeat five times at about 15-second intervals. Use artificial respiration if breathing has stopped.

If HCN is swallowed: Break an amyl nitrite pearl in a cloth and hold lightly under nose for 15 seconds. If patient is conscious, or when consciousness returns, give emetic (1 tablespoon of salt to each glass of warm water) and repeat until vomit fluid is clear. Repeat inhalation of amyl nitrite five times at about 15-second intervals. Use artificial respiration if breathing has stopped.

NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON

NOT TO BE OPENED EXCEPT BY EXPERIENCED OPERATORS

This can contains hydrocyanic acid (HCN) which evaporates from the DISCOIDS upon opening the can. Operators must wear approved gas masks equipped with special HCN canisters. Do not breathe vapors. Use only special DISCOID can opener. Entire contents must be used at one time once the can is opened.

FUMIGATION SAFETY RULES

1. Vacate entire building and adjoining buildings even if only part of building is fumigated.
2. Make personal inspection of entire premises immediately before releasing gas.
3. Eliminate all sources of ignition, including fires, pilot lights and electrical sparks.
4. Lock all exit doors and accessible windows; place warning signs thereon. Guard premises adequately during fumigation and ventilation.
5. Always wear gas mask equipped with HCN canister: Keep mask in perfect condition.
6. Beat all mattresses, pillows, bedding, clothes and rugs: Test for presence of HCN before allowing tenants to use.
7. If in doubt, do not allow a dwelling to be occupied on the night of the day it has been fumigated.

DISCLAIMER

American Cyanamid Company warrants only that the material contained herein conforms to the chemical description on the label and is reasonably fit for the use therein described when used in accordance with the directions for use.

Any damages arising from a breach of this warranty shall be limited to direct damages, and shall not include consequential commercial damages such as loss of profits or values, etc.

American Cyanamid Company makes no other express or implied warranty, including any other express or implied warranty of FITNESS or of MERCHANTABILITY.

BUYER assumes the risk of any use contrary to label instructions, or under abnormal conditions, or under conditions not reasonably foreseeable by American Cyanamid Company.

AERO®

HCN

DISCOIDS

STOP

FOR USE BY PEST CONTROL OPERATORS ONLY

PELIGRO

AL USUARIO: Si usted no lee inglés, no use este producto hasta que la etiqueta le haya sido explicada ampliamente.

(TO THE USER: If you cannot read English, do not use this product until the label has been fully explained to you.)

DANGER!

KEEP OUT OF REACH OF CHILDREN

POISON

DANGER! POISONOUS LIQUID AND GAS — EXTREMELY FLAMMABLE

MAY BE FATAL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN

Keep away from heat, sparks and open flame. Do not get in eyes, on skin, on clothing. In case of contact, remove contaminated clothing and wash thoroughly.

FIRST AID

Carry patient to fresh air. Have him lie down. Remove contaminated clothing, but keep patient warm. CALL A PHYSICIAN IMMEDIATELY.

See side panels for antidote and other warnings. USDA Reg. No. 241-7

CYANAMID

ACTIVE INGREDIENT:

HYDROCYANIC ACID 96%

INERT INGREDIENTS 4%

FOR FUMIGATING HOMES, RAILROAD CARS AND SHIPS, FOR CONTROL OF BEDBUGS, COCKROACHES, CLOTHES MOTHS, CARPET BEETLES, AS WELL AS RATS AND MICE.

BEFORE APPLYING DISCOIDS, READ MANUAL CONTAINED IN THE CASE IN WHICH THIS CAN WAS SHIPPED.

NET WEIGHT: 2-1/2 LBS. (1134 GRAMS)	[illegible]	[illegible]

DOSAGE AND EXPOSURE

For rats and mice—2 to 4 oz. per thousand cubic feet; (2 to 4 grams per cubic meter) exposure 2 to 8 hours. For insects—16 to 24 oz per thousand cubic feet; (16 to 24 grams per cubic meter) exposure 8 to 24 hours (see manual)

FUMIGATION PROCEDURE

1. Seal all windows, doors and other openings, except exit doors.
2. Remove all foods not in sealed containers
3. Do not fumigate any part of an enclosed space, unless all persons and domestic animals have been removed from the entire building.
4. DISCOIDS should never be applied by an operator working alone. One or more assistants, all wearing gas masks, should always be on hand.
5. When fumigating for insects, temperature in the enclosed space should be 65° F or above; temperature is of less importance when fumigating closed buildings for rats and mice.
6. All fires and pilot lights should be extinguished before fumigation.
7. Attach warning signs outside each exit door before starting fumigation and during ventilation.
8. Distribute the required number of cans of DISCOIDS (unopened) throughout the building at the places where it is desired to apply the fumigant. If floors are polished or are covered with rugs, provide adequate protective material, as specified in the enclosed manual, on which to scatter the DISCOIDS to avoid damaging floors and rugs.
9. With one or more assistants (all persons wearing gas masks) open first the cans on the top floor and farthest from exit. One man should open cans while another scatters DISCOIDS away from all operators as they work toward exit. DISCOIDS should be scattered directly from the cans; do not handle DISCOIDS with bare hands; HCN may be absorbed through the skin as well as through the lungs.
10. Work quickly but do not rush. Never re-enter a fumigated space, except to ventilate. (See below.)
11. Lock and seal exit door immediately. Be sure guards are on duty at all times.

VENTILATION

1. Do not permit reoccupancy until absolutely certain premises and furnishings are entirely free of gas.
2. Wearing gas mask, open all doors. After approximately one-half hour, wearing gas mask, enter building and open windows to complete ventilation. Do not remain in building. Test for presence of HCN at one-half hour intervals by placing methyl orange test papers between pillows, mattresses, blankets or packed clothing (see manual) until tests show negative.

In cold weather close windows and doors after initial one-hour ventilation, heat interior to at least 70° F and re-ventilate. Repeat procedure until methyl orange paper tests for HCN are negative.

DISPOSAL OF SPENT DISCOIDS. Collect immediately after ventilation and dispose by burning. Perforate or crush container when empty. NEVER RE-USE.

KEEP AWAY FROM HEAT, SPARKS AND OPEN FLAME

STORE IN A COOL, DRY AND WELL-VENTILATED PLACE

POISON

In case of an emergency endangering life or property involving this product, call collect, day or night, Area Code 201-835-3100.

AMERICAN CYANAMID COMPANY

AGRICULTURAL DIVISION

PRINCETON, N.J. 08540

® TRADEMARK Made and Printed in U.S.A.

ACCEPTED WITH COMMENTS

FUMIGATION MANUAL

AERO®

HCN

DISCOIDS

For fumigating enclosed spaces such as homes, railroad cars and ships, and for control of insects, such as bedbugs, cockroaches, clothes moths, and carpet beetles as well as rats and mice.

USDA Reg. No. 241-7
FOR USE BY PEST CONTROL OPERATORS ONLY

CYANAMID

INTRODUCTION

AERO HCN DISCOIDS contain hydrocyanic acid of commercial purity averaging 96% to 98%, which is absorbed in an inert material of a porous and absorptive nature, such as wood or paper pulp, cut out in the form of thin discs.

These discs are particularly adapted for fumigation of small spaces. Ideally suited for use in household fumigation and in atmospheric fumigation chambers. They do not break or crumble even though thrown about or roughly handled. DISCOIDS THEREFORE ARE CLEAN AND LEAVE NO DIRT OR DUST IN THE FUMIGATED SPACE.

AERO HCN DISCOIDS are sold and used on the basis of the net content of hydrocyanic acid without regard to the weight of the inert material, and are packed in convenient containers of 40 ounces each.

DANGER

HCN is a poisonous gas. Do not breathe it, as inhalation may cause death. DISCOIDS should be scattered directly from the cans; do not handle DISCOIDS with bare hands; HCN may be absorbed through the skin as well as through the lungs. Store containers in a cool, dry and well-ventilated place.

Do not open cans of HCN DISCOIDS unless you and your assistants are experienced in using hydrocyanic acid, and are wearing self-contained breathing apparatus or gas masks equipped with special canisters for protection against HCN gas, approved by the U. S. Bureau of Mines.

It is never necessary nor advisable to apply DISCOIDS by handling the individual discs one at a time. Too much time is consumed in this manner and you are exposing yourself to a dangerous concentration of gas even when equipped with a mask. The smallest space can be satisfactorily taken care of by shaking out of the can on to the floor on suitable protective material, one-half or one-fourth of the contents of a can of DISCOIDS.

Cyanide poisoning is an extreme medical emergency, and, if it occurs, there must be no delay in commencing first aid and treatment. Therefore, you should have on hand, ready for immediate use, the following items of equipment.

A. A simple mechanical resuscitator of the hand-operated air-bag type. Examples of this are the PULMONATOR (Western Anaesthesia Equipment Co., 440 Page Mill Road, P. O. Box 11577, Palo Alto, California) and the AMBU Resuscitator (Air-Shields, Inc., Hatboro, Pa.). These devices have inlet valves through which it is possible to introduce therapeutic gases such as oxygen or amyl nitrite vapor.

B. A CYANIDE FIRST AID KIT consisting of the following items:

- 2 dozen pearls (ampules) of amyl nitrite (5 minims each)
- 2 sterile ampules (10 ml each) of 3% sodium nitrite
- 2 sterile ampules (50 ml each) of 25% sodium thiosulfate
- 2 1-pint bottles of 1% aqueous solution of sodium thiosulfate
- 1 sterile 10-ml syringe with intravenous needle
- 1 sterile 50-ml syringe with intravenous needle
- 1 tourniquet
- 1 stomach tube
- 12 gauze pads
- 1 small bottle of 70% alcohol

The ampules of sodium nitrite and sodium thiosulfate may be obtained from Eli Lilly and Co., Indianapolis, Indiana. Pearls of amyl nitrite are available, on a doctor's prescription, from most drug stores. Amyl nitrite may decompose on prolonged storage, so that unused pearls should be replaced after approximately one year.

This kit should be ready for the doctor to use as soon as he arrives at the scene of an emergency.

PREPARATION OF BUILDING FOR FUMIGATION

Preliminary Procedure:

The first step in any fumigation procedure is to take careful measurements of the house, dormitory, barracks or space to be fumigated, in order to determine the total cubical contents. In taking these measurements, no deductions should be made for space occupied by commodities or furnishings. The full dimensions should be taken as if the room or floor were empty. The dimensions and cubic capacity of each room on each floor should be figured separately and these figures tabulated together with the dosage for each room, number of windows, street entrances and other places to be sealed, etc.

In the case of rooms containing many trunks, boxes, etc. of clothing, blankets and similar articles, the containers should be opened and the contents hung or spread about the room.

All clothes and storage closet doors and furniture drawers should be opened to permit ready access to the gas for, while hydrocyanic acid has remarkable penetrating powers and is a most effective fumigant, such procedure will contribute to the success of the job.

Sealing

The building should be made as tight as possible. The tighter a building is, the more effective and certain will be the action of the gas. Go over the building carefully from top to bottom and see that all openings are closed and that large cracks and crevices are closed and sealed. Broken window panes should be replaced. Ventilators, skylights and cracks around window frames may be made tight by pasting strips of paper over them. Large cracks should be well stuffed with old sacks or cotton batting. Fireplace flues or chimneys should be stuffed with paper, and heat or ventilating registers should be closed and, if necessary, sealed to prevent loss of gas during fumigation.

If windows are in good condition but inclined to be open between upper and lower sash, small wooden wedges should be inserted to draw them together — but only hand tight. Do not drive the wedges home with a hammer, and be sure that one or two windows on each side of each floor can be opened easily to facilitate airing procedure.

For sealing dwellings, the materials known on the market as "Masking" tapes are highly satisfactory. The widths most generally used are one inch and two inch.

Hydrocyanic acid will find its way through the smallest openings. It is not safe, therefore, to depend upon a partition wall to keep gas from escaping from the part of the building under fumigation into an adjacent part of the building or into an adjoining building that is not being fumigated.

Fires

All possible sources of ignition should be eliminated from the space under fumigation, including all gas pilot lights and automatic electrical devices. The main fuel gas control valve should be closed and the main electrical switch pulled to the OFF position prior to fumigation. As electrical units such as sump pumps, refrigerators and oil burners are sometimes on separate power lines, it should be seen that these are also disconnected.

Hydrocyanic acid gas is known to diffuse rapidly when normal dosages are released into the space to be fumigated, so that the concentration is quickly distributed so that the air does not reach the flammable or explosive range. However, there is a possibility that a flammable concentration may be approached near the discs immediately following discharge from the can before good diffusion has taken place. Therefore, all of the above precautions must be followed.

Provision for Ventilation

The rear and front doors on the street floor should be so locked that they may be opened from the outside when ready to ventilate. Opening these doors will create a draft which will help materially to dissipate the gas.

Temperature

In order to insure a thorough kill of insects it is necessary that the temperature throughout the building or buildings to be fumigated should be 65° F. or above. Experiments have shown that at a lower temperature than this, the insects become dormant and are not so readily affected by any fumigant. This does not apply, however, to rats and mice.

Foodstuffs – Removal of

All foodstuffs [illegible] containers should be removed. Also [illegible] growing plants.

DOSAGE AND EXPOSURE

Dosages are based on [illegible] hydrocyanic acid content. Therefore, all references herein to ounces of Discoids means ounces of hydrocyanic acid.

Rats and Mice

The dosage of HCN commonly employed where fumigation is for rats or mice only is 2 ounces per 1000 cubic feet of space with an exposure of 2 to 3 hours. However, in instances where there are any unusual harborages afforded the rodents due to construction or contents of ship or building, higher dosages are used, namely from 3 to 4 ounces per 1000 cubic feet. Also, in such cases, exposures of 6 hours or more are recommended.

Domestic Dwellings

It has been observed that under ordinary circumstances a dosage of 8 ounces of HCN for every 1000 cubic feet of space and an exposure of 12 hours at a temperature of at least 65° F. gives very satisfactory results in most cases in the fumigation of domestic dwellings where the common infestation is cockroaches, bedbugs or clothes moths.

Where time is an important factor, the period of exposure may be reduced to a minimum of 6 hours provided the dosage is increased.

Certain exceptions to the above will obtain, however, and these should be carefully noted. For instance, where a room or rooms contain appreciable amounts of clothing, bedding, mattresses, etc., allowance should be made for absorption and penetration of the gas by these articles and accordingly a greater dosage [illegible] these rooms.

FUMIGATION OPERATION

Safety first [illegible] on Precautions and Safety Measures before attempting to handle Discoids.

Can Opener

Cans of [illegible] Discoids can [illegible] satisfactorily opened only with the special Discoids Can Opener [illegible] do not attempt to [illegible] other opener. Suitable can openers are available from Acme Brass and Machine Works, [illegible] East [illegible] Street, Kansas City, Missouri.

The can opener [illegible] properly adjusted at the factory. The only [illegible] to keep [illegible]

Can Support

[illegible]

Cooling Discoids

[illegible]

One convenient method [illegible] Another method [illegible] the cans in the home refrigerator [illegible]. On some occasions, however, especially in very hot weather, these methods may not result in cooling the [illegible]. In the [illegible] of time consumed between removing the cans from the cooling medium and distributing them, a certain amount of the cooling effect is bound to be lost [illegible] builds up in the cans. Under these conditions the [illegible] suitable.

The procedure in using dry ice is to apply about twenty pounds to each case of 40 oz. Discoids one to three hours before the fumigation. It would be preferable to expose the cans to the dry ice for the longer period. Crack the dry ice and place an equal amount on each can in the box. Replace the paper cover over the top of the case and put a blanket or pad on top of the box. The dry ice will evaporate entirely within the three hour period but care should be taken not to freeze the cans and not to let the cans get too warm again before using since, in the latter event, the desired effect will be lost.

Warning

Dry ice in direct contact with the skin will cause damage resembling a burn. It is, therefore, advisable to wear cotton or canvas work gloves when handling the material.

Fumigation Procedure

When the building is ready to be fumigated, and before applying the Discoids, see that all persons and animals are out of the building. The safest way to insure this is to place a guard at the main entrance with orders to allow no one to enter, while the operator in charge of the fumigation (together with an individual who is familiar with the lay-out of the building) goes through the entire building from roof to basement calling out a warning and investigating all rooms. Finally make a check of all persons who were in the building or who may have been preparing it for fumigation.

Distribute the required number of cans of Discoids (unopened) throughout the building, at the places where it is desired to apply the fumigant. As a precaution against staining or marring floors, carpeting or rugs, place some suitable protective material alongside of each can so that at the time of fumigation the discs may be scattered on to this. For this purpose, some pest control operators use wire baskets. Suitable baskets may be obtained in almost any house furnishing or department store. They are of the "dish drain" type. They are approximately 12" by 18". These baskets have short legs which keep the basket clear of the floor and it is only necessary to shake the Discoids from the can, spreading them in the basket. The bottom of the basket being raised off the floor permits circulation of air around the Discoids, resulting in quicker diffusion and distribution of the gas.

When all the unopened cans of Discoids have been distributed and the operator in charge is satisfied that all is in readiness, a guard should be placed at the exit door with orders to allow no one to enter or, in the absence of a guard, the door should be locked from inside in such way that the operator can readily make his exit later.

Before applying fumigant, close main fuel gas control valve. Pull main electrical switch. As electrical units such as sump pumps, refrigerators and oil burners are sometimes on separate power lines, it should be seen that these are also disconnected. Turn off all gas pilot lights.

With an assistant (both operator and assistant wearing gas masks) the operator starts the process of fumigating from the top floor, beginning with the can or cans farthest from the exit and working toward the exit. One man opens the cans while the other follows along scattering the discs. They should work together and so time their action that the man opening the cans does not get too far ahead of the other one.

In opening the cans and scattering the discs the operators should at all times work in a direction away from the gas and towards the exit.

Operators should never retrace their steps while scattering the Discoids, even though equipped with gas masks. It is always dangerous to re-enter a fumigated space. Operators should work quickly but they should not rush.

Having finished the top floor, the operators proceed immediately to the next lower floor to repeat the operation, and so on down, skipping the main or street floor, in order to fumigate the cellar. The main floor should be fumigated after the cellar. After the work is completed, operators should

ock and seal the doors from the outside. Once [illegible]
entire time building is under gas.

Ventilation

In accordance with arrangements previously [illegible]
outside, opening first the door opposite the direction [illegible]
should be worn during the entire period of operating [illegible]

After this preliminary ventilation has been [illegible]
upon weather conditions it should be safe for the operator
additional windows, but they should not remain [illegible]
They should move quickly and get out at once.

It is important to have guards at entrances during [illegible]

Specific information as to length of time recommended for [illegible]

Much depends upon the movement of air currents, the temperature [illegible]
of gas leakage from the building during the hours of fumigation. It may [illegible]
to 24 hours or more for complete aeration. To be absolutely safe, the premises [illegible]
there is no reaction with methyl-orange test papers (see pages 11 and 12 [illegible]
Ventilation), before persons are allowed to enter for normal resumption of occupancy.

It is obviously the fumigator's responsibility to make sure that the premises are properly and thoroughly aerated before turning them over to the tenants. He should take all necessary precautions such as testing for the presence of HCN in bedding, mattresses and pillows. Finally, if there is any doubt as to whether or not the building and the furnishings are completely free of HCN, then the fumigator should not permit occupancy, even if it is necessary to keep the tenants out of the premises over night.

Removing the paper seals from ventilators and heat registers will help considerably to speed up the process of ventilation. Also in the case of buildings with sub-basements and other places that appear to be difficult to aerate, the use of properly placed exhaust fans, equipped with explosion-proof motors is suggested. Open main fuel gas control valve and relight all pilots. Close all electrical switches pulled before fumigation.

Winter Fumigation – Special Precautions

During the cold weather it is particularly important for the pest control operator to make sure that the premises are thoroughly and completely aerated before permitting any one to occupy them. In this connection we wish to repeat the recommendations made some years ago by Dr. C. L. Williams, Senior Surgeon of the United States Public Health Service, at one of the Annual Conventions of the National Pest Control Association:

> *"Follow fumigation with a thorough airing until the premises themselves are free of gas. The fumigated space should then be closed and the heat turned on, the inside temperature being brought to between 74° to 85° and maintained there for an hour or longer. All windows should then be opened again and the space once more thoroughly ventilated.*
>
> *"The logic of this procedure is as follows. First, the gas that is in the fumigated space must be removed, otherwise the gas that is in the mattress will not ventilate out of it. Ventilation accomplishes this and also accomplishes the removal of a considerable proportion of the absorbed gas. When the unwashing cold air from outside, however, has chilled the mattress, its ventilation becomes materially impaired, as I have described. The next step, then, is to close the space, now free of gas, and heat it. The mattress becomes heated and the retained hydrocyanic gas evaporates. Since the air in the room contains no gas, the gas in the mattress diffuses into it. The succeeding ventilation removes this. Despite this procedure, there will still remain a small amount of gas in the mattress, but it should not be enough to produce serious consequences except, possibly, if fumigations are performed with outside temperatures below zero Fahrenheit when it seems to me it might be well to repeat this process a second time."*

HCN DISCOIDS FOR SHIP FUMIGATION

[illegible]

[illegible] is well [illegible] fumigation outside of so-called quarantine [illegible] the superstructure where normal human habitation will cause an infestation of roaches and bedbugs. Such infestations can reach large proportions unless kept in check by periodic fumigation.

DISCOIDS are most suitable for ship fumigation. It is merely necessary to distribute the required number of the DISCOIDS to each stateroom or other part of the ship. The cleanliness of DISCOIDS is an especial convenience in ship fumigation, as it eliminates any extra work in cleaning up the residue, and prevents the possibility of damaging furnishings in the case of expensively decorated staterooms and salons.

Dosage

The dosage of HCN commonly employed where fumigation is for rats only is 2 ounces per 1,000 cubic feet of space with an exposure of 2 to 3 hours. However, in instances where there are any unusual harborages afforded the rats, due to construction or load of ship, higher concentrations are used, namely from 3 to 4 ounces per 1,000 cubic feet of space. When fumigation is for roaches or bedbugs, the dosage generally used is 8 ounces per 1,000 cubic feet with a minimum exposure of 6 hours.

Preliminary

The first step in the fumigation of a vessel is to determine the cubic capacity of the ship's compartments in order to calculate the amount of DISCOIDS to be used in each space. This should be carefully tabulated and an inspection made of the entire ship in company with the ship's officer in charge. This inspection is made to discover rat harborage which might need special attention, and also to determine the presence of any unauthorized persons aboard.

Preparation

In the preparation of a ship for fumigation, all timbers, pipe casings, dunnage, double walls, lockers, drawers and other rat and insect harbouring spaces should be opened up to allow free penetration of the gas. Bilge boards should be removed when possible, at least two boards on each side of each hold.

[illegible] closed [illegible] [illegible]

[illegible] discoids and [illegible] vessel should be [illegible] to the [illegible] are roped [illegible] aboard. [illegible] spect all spaces to see that all [illegible] on the ship's officer a signed [illegible] removed to a place of safety. Strict guard [illegible] persons come aboard.

Application

When the operator is satisfied that everything is in readiness, he proceeds to release the gas. The necessary containers have previously been spotted at the points of distribution, alongside the open corner of each hatch. The cans are now opened, one at a time, and the operator standing on deck holds the can under the tarpaulin and scatters the contents into the hold. The tarpaulin is then pulled tight and battened down. During fumigation, all spaces not gassed, such as life boats, dunnage on deck, vegetable and deck lockers, etc., are carefully examined for rats.

In fumigating superstructure, staterooms, etc., the DISCOIDS should be scattered onto suitable protective material to avoid staining flooring or floor covering. Usually one container of DISCOIDS will take care of several staterooms. The operator drops the required number of DISCOIDS into each stateroom, keeping a cover on the container as far as possible between operations.

After the ship has been under gas for the required length of time, the operators, wearing gas masks, open up the hatches, ventilators, doors, etc., from the exterior. HCN gas is lighter than air, and a ship is usually quickly ventilated after fumigation. If, however, difficulty is experienced in ventilating holds, a canvas hatch cover may be hung over the hatch in a manner to deflect the wind into the hold.

The superstructure should not be entered for at least fifteen minutes after opening up, and the holds for at least one hour. In addition, it is advisable to lower a live rat in a wire cage to the bottom of each hold and leave it there for at least five minutes, to test for gas. If the rat is unaffected, the operator in charge may go personally or see one of his men go through all spaces on the ship before it is declared free from gas. Men making this test should wear gas masks, carry flashlights and be watched from deck.

All pillows, mattresses, bedding, clothing, rugs, etc., should be taken on deck and thoroughly aired immediately after fumigation, before being used.

GENERAL INFORMATION
AERO HCN DISCOIDS

Following are the packing specifications which conform to the Interstate Commerce Commission regulations.

Net HCN contents per can	[illegible] oz.
Approximate gross weight of can	[illegible] lbs. 6 ozs.
Number of cans to the case	12
Net HCN contents per case	[illegible]
Gross weight of case (approx.)	70 lbs.
Dimensions of can (outside)	[illegible] x 10[illegible]
Dimensions of case (outside)	22[illegible] x 17[illegible] x 10[illegible]
Diameter of Discoids	[illegible]
Thickness of Discoids (approx.)	[illegible]

Evolution of HCN from DISCOIDS

In laboratory tests which were conducted [illegible] and an aeration period of one [illegible] [illegible] 90-95%.

Storage of DISCOIDS

DISCOIDS should be stored in a cool, dry [illegible] sufficiently isolated so that in the event of any [illegible] animals being affected.

While DISCOID containers are subjected to severe tests [illegible] advisable to follow these recommendations.

Requirements should be ordered as needed, and there should be no reason for keeping DISCOIDS on hand longer than one year. Avoid carrying stocks in excess of current demand.

Fire and Explosive Limits

HCN is flammable and forms explosive mixtures with air. Explosive limits range from approximately 6% to 41% by volume in air. Average fumigation concentrations are well below the lower limit. The highest practical dosage would be less than 5%. However, because of the possibility of the gas pocketing within the fumigated space to form concentrations within the flammable range, all sources of ignition should be eliminated, including all gas pilot lights and automatic electrical devices. The main fuel gas control valve should be closed and the main electrical switch pulled to the OFF position prior to fumigation.

EFFECT OF HCN ON CERTAIN MATERIALS

Photographic Films

It has been found that hydrocyanic acid gas has some effect on unexposed photographic films, causing fogging. It is therefore advisable before fumigating places in which unexposed photographic papers and films are stored, to remove this material. Developed and fixed negatives and photographs are not ordinarily affected by hydrocyanic acid gas.

Seeds

Fumigation of various kinds of seeds is common practice. Naturally, it is vitally important to make sure that the fumigant to be used will not affect the germinating qualities of the seeds. Certain fumigants have a definite tendency in this direction. Hydrocyanic acid has been used for many years for fumigation of a great variety of seeds. We have no record or knowledge of any unfavorable effect of the fumigant upon the germinating qualities of seed in good seed storage condition and having a moisture content below 14%. In fact, under certain circumstances, hydrocyanic acid fumigation has been known to stimulate germination.

Painted Surfaces—Walls

In rare instances and under unusual conditions, discoloration of painted walls has occurred, for example, where paint has been freshly applied and not dried before fumigation. In such cases the oils in the paint sometimes combine with the hydrocyanic acid to produce discoloration. Such discoloration can usually be removed with hydrogen peroxide after the paint has dried, but it would seem almost needless to remark that fumigation in such cases should be postponed until the paint is thoroughly dry.

In some instances discoloration of painted walls may occur because of unusual conditions of humidity and temperature which result in the formation of thin films of moisture on the walls. This condition seldom if ever occurs at normal atmospheric humidities up to 70%, independent of the temperature, and discoloration will only occur at relative humidities above 80%. Therefore, when fumigation of a domestic dwelling, ship, or other structure having finished walls is contemplated under conditions of abnormal humidity, the fumigation should never be performed at a time when the temperature is declining

For example, it would be a mistake to perform the fumigation in the afternoon, with a contemplated exposure of 12 hours – since the temperature would ordinarily be falling, producing a condensation of moisture on the walls. Under such abnormal moisture conditions, fumigation should as a rule be begun in the early morning, so that a rising temperature would be encountered up until the time of opening up.

Rayon

An investigation undertaken by our laboratories some time ago disclosed that rayon made by the acetate process, rapidly disintegrated when brought in direct contact with liquid hydrocyanic acid. Rayon made by the viscose process was not affected. It is important to note, therefore, that when scattering DISCOIDS in clothes closets and similar places, extreme care should be taken not to throw them on or against clothing, dresses and the like.

By way of explanation, hydrocyanic acid in the pure state is a liquid of low boiling point. It vaporizes rapidly to the gaseous state on exposure, as when DISCOIDS are scattered in the place to be fumigated. The gaseous vapor will do no harm but the actual DISCOIDS containing the pure liquid hydrocyanic acid should not be brought in contact with any clothing or fabrics, particularly rayon, for the above reason.

Clocks

On rare occasions it may be found that the clocks in a house have stopped after fumigation, particularly when a heavy dosage of gas has been used and a long exposure given. This phenomenon may be due to some physical action between the gas and the lubricating oil in the clocks, causing the oil to become somewhat heavy. There is no permanent damage done to the clocks, however, and the remedy is simple. The clocks should either be removed before fumigation or if that is not done, and the clocks have stopped it is only necessary to take them to a jeweler and have him clean and re-oil them.

Mirrors and Glass-Mirrored Ornaments

On very rare occasions it has been found after fumigation that mirrors have been fogged or stained as a result of exposure to the gas. Also, in some cases the same condition was observed with respect to blown glass table ornaments having a silvered finish and also to silvered Christmas tree ornaments.

It has been noted that mirrors of good quality are usually very well coated with a material which is impervious to moisture or gases or any of the natural elements which might have a deteriorating effect on the mirrored surface. However, it is conceivable that an inexpensive mirror might have only a light protective coating or it could be the case that, with a very good quality mirror, the coating would permit moisture and gas to get through, as a result of deterioration by aging or scratches. In that case, there would be the possibility of the above described fogging or staining.

Christmas tree ornaments and silvered glass table ornaments are not likely to have much protective coating and it would, therefore, seem advisable to remove these articles before fumigation.

Caution: DISCOIDS should never be thrown directly on to commodities, foodstuffs, clothing, furniture, carpets or finished floors.

PRECAUTIONS AND SAFETY MEASURES

(1) Obey local regulations governing fumigation. Notify local police and fire departments, advising the hours of fumigation.

(2) Determine the location of the nearest telephone to be used in case of accident.

(3) Do not fumigate any part of a building until you have made sure by personal inspection that all human beings and domestic animals have been removed from all parts of the building, and from all adjacent buildings to which the gas may penetrate.

(4) Before fumigation remove all foods unless contained in sealed containers. All potted or growing plants or flowers should be removed. All possible sources of ignition should be eliminated from the space under fumigation including all gas pilot lights and automatic electrical devices. The

main fuel gas control valve should be closed and the main electrical switch pulled prior to fumigation. As electrical units such as sump pumps, refrigerators and oil burners are sometimes on separate power lines, it should be seen that these are also disconnected.

(5) Lock all exit doors and accessible windows. Attach warning signs outside each exit door and accessible window.

(6) Always wear gas mask equipped with HCN canister; keep mask in perfect condition.

(7) Never apply DISCOIDS alone; always have one or more assistants on hand, all wearing gas masks.

(8) Work quickly but do not rush. Never re-enter a fumigated space except to ventilate. Then, wear a gas mask.

(9) Maintain an alert guard on duty all during the time the building is under fumigation and until it has been opened up and thoroughly ventilated.

(10) Beat all mattresses, pillows, bedding, clothing and bedroom rugs; test for presence of HCN before allowing tenants to use.

(11) If the fumigator has any doubt that the house and furnishings, bedding, mattresses, etc. are not entirely clear of gas, he should not allow the house to be occupied on the night of the day it has been fumigated.

(12) Have antidote kit always readily available.

Respiratory Protection

Although hydrocyanic acid is an extremely toxic material, it has been used successfully for more than half a century by industry and agriculture in large qantities. However, adequate safety precautions must be taken and familiarity with specific emergency measures is essential to its safe handling. Hydrocyanic acid is poisonous to man and to animals by inhalation of the gas, by oral intake, or by skin absorption.

The toxicity of hydrocyanic acid necessitates that it be handled and processed in closed systems, and that adequate ventilation be provided in working areas. One man must not work alone with HCN. A second person must be present at all times, stationed at a safe distance, yet ready to render immediate assistance in the event it is needed.

Respiratory protective equipment should be available for instant use in case of need. Although contact with the skin is dangerous, the greatest danger to man and animals is from inhalation of the gas or vapor. However, poisoning by the gas need not be fatal if proper action is taken without any delay.

Self-contained breathing apparatus which permits the wearer to carry a supply of oxygen or air compressed in the cylinder, and the self-generating type which produces oxygen chemically allow for a high degree of respiratory protection and good mobility. The length of time a self contained breathing apparatus provides protection varies according to the amount of air or oxygen supply carried. Compressed oxygen should not be used in tanks or other confined spaces.

2. *Industrial canister type gas masks*, equipped with full face pieces and approved by the U. S. Bureau of Mines, fitted with the proper canister for absorbing hydrocyanic acid vapor, will afford protection against concentrations of hydrocyanic acid not exceeding 2% by volume when used in accordance with the manufacturer's instructions. The oxygen content of the air must not be less than 16% by volume. The masks should be used for relatively short exposure periods only, such as may be required for emergency exit from a contaminated area. They are not suitable for use in entering a contaminated area since the actual concentration is unknown and may be very high. Under such circumstances the self contained breathing apparatus described above is suggested. Remember also that the HCN vapor may be absorbed through the skin. Protective clothing should be worn as well.

Test for the Presence of HCN

Although hydrogen cyanide (HCN) has a characteristic odor, its toxic action at hazardous concentrations is so rapid that the odor is of no value as a warning. Its presence in air can be detected by means of

ethyl orange mercuric chloride test papers. These papers are orange in color. The color changes from orange to pink or red at relatively low concentrations of hydrogen cyanide gas. If the test papers do not change color within two minutes after exposure to a suspected concentration of the gas, the atmosphere is considered safe for human occupancy.

Methyl orange mercuric chloride test papers can be obtained from American Cyanamid Company or from chemical supply houses. Cyanamid bottles bear a special label with directions and a color chart indicating color changes for different concentrations of HCN. Since these test papers are not likely to be effective if dried out, they should be kept in a moist condition in a tightly sealed bottle, away from an acidic atmosphere. A fruit jar with a small sponge fastened inside the cover is a very satisfactory container. The sponge should be kept moistened with water at all times.

Presence of hydrogen cyanide in the air can also be established by the use of the HCN Gas Detector obtainable from the Mine Safety Appliance Company, Pittsburgh, Pa.

First Aid Procedures

In case of accident, the person administering first aid must not panic. He must act quickly. Poisoning by the gas need not be fatal if prompt action is taken. An unconscious victim should not be rushed to the hospital. Prompt action on the spot is essential. Periodic review and practice of the following first aid procedures should be conducted to insure immediate and competent action.

1. **DO NOT BREATHE THE GAS YOURSELF EVEN FOR A SHORT TIME. IF IT DOES NOT OVERCOME YOU, IT WILL CUT DOWN YOUR STRENGTH.**
   Rescuers entering a contaminated area MUST be adequately protected with self-contained breathing apparatus and any protective clothing which may be necessary. Canister type gas masks are not dependable under such circumstances of possible high concentration.
2. **CARRY PATIENT TO FRESH AIR. HAVE HIM LIE DOWN.** First, move the victim into fresh air quickly. Fresh air does not mean out of doors in cold weather, however. Many men have walked from a warm room containing gas only to collapse in the cold outside air. Take the patient to a room free of gas and comfortably warm. Be quick, but do not be unnecessarily rough. Do not permit the victim to exert himself; keep him lying down.
3. **REMOVE CONTAMINATED CLOTHING BUT KEEP PATIENT WARM.** Put the clothing out doors or away from the space occupied by the victim and rescuers. As far as possible keep the patient covered and warm both during and after resuscitation. Use hot pads, hot water bottles, radiant heaters or other similar means, but remember that an unconscious man has no way of telling you when he is being burned. Sufficient warmth is essential since an unconscious person becomes cold very rapidly and chilling means a further strain on a vitality already weakened.
4. **HAVE SOMEONE CALL A PHYSICIAN.** In all cases keep the [illegible] quiet and [illegible] until a physician arrives.
5. **IF HCN IS INHALED.** Break an amyl nitrite pearl in a cloth and hold it [illegible] under the nose for [illegible] seconds. Repeat five times at about 15 second intervals. Use a fresh pearl [illegible] pearls have been administered. Use artificial respiration if breathing [illegible] has stopped.
6. **IF HCN IS SWALLOWED.** Break an amyl nitrite pearl in a cloth and hold it lightly under the nose for 15 seconds. If patient is conscious or when consciousness returns, give an emetic [illegible] teaspoon of salt in a glass of warm water, and repeat until vomit is clear. Repeat inhalation of amyl nitrite five times at about 15 second intervals. Use a fresh pearl every 3 minutes until [illegible] pearls have been administered. Use artificial respiration if breathing [illegible] has stopped.

WARNING: Those giving first aid should be careful to keep the broken pearls away from their own mouths and noses, otherwise they may inhale the amyl nitrite, become dizzy, and be rendered incompetent to give proper assistance to the poisoned victim. Vapor of amyl nitrite is flammable, and its mixture with air may present an explosion hazard if a source of ignition is present.

NEVER GIVE ANYTHING BY MOUTH TO AN UNCONSCIOUS PERSON.

7. **IF RESPIRATION IS WEAK OR HAS CEASED, ARTIFICIAL RESPIRATION SHOULD BE APPLIED AT ONCE.** The purpose is not only to revive the respiration per se, but to keep the heart beating. The handkerchief containing amyl nitrite should [illegible] patient's nose [illegible] may hasten the resumption of respiratory movements.

Antidote

NOTE TO PHYSICIANS: The nitrite-thiosulfate regimen is a specific antidote for cyanide poisoning. The following procedure has been found to be very effective. It should be administered *only under the direction of a physician.*

1. Load syringes, without delay — one with 10 ml of a 3% solution of sodium nitrite and the other with 50 ml of a 25% solution of sodium thiosulfate. Only the specially prepared intravenous solution in ampules should be used.
2. Stop administration of amyl nitrite and inject intravenously 0.3 g (10 ml of a 3% solution) of sodium nitrite at the rate of 2.5-5.0 ml per minute.
3. Inject by the same needle and vein, or by a larger needle and a new vein, 12.5 g (50 ml of a 25% solution) of sodium thiosulfate.

The patient should be watched for at least 24-48 hours. If signs of poisoning reappear, injection of both sodium nitrite and sodium thiosulfate should be repeated but each in one half of the original dose. Even if the patient looks perfectly well, the medication may be given for prophylactic purposes, 2 hours after the first injections.

Artificial Respiration

If the patient's breathing is weak or has stopped, artificial respiration should be started at the earliest possible moment and continued without interruption until normal breathing has been established or the patient is pronounced dead. Before instituting artificial respiration, dentures and foreign objects such as gum and tobacco should be removed from the patient's mouth and the tongue [illegible] forward.

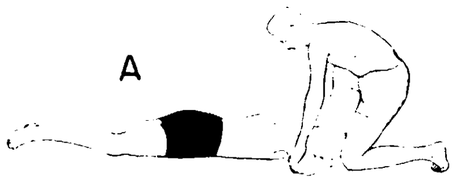
The use of a hand [illegible] (see Page [illegible]) is the method of choice for its simplicity and effectiveness. If the resuscitator is not *immediately* available, start mouth to mouth artificial respiration at once while a second person secures the resuscitator. The advantage of the resuscitator over the mouth to mouth method [illegible] the administration of amyl nitrite vapor [illegible] being operated. [illegible] contents of the [illegible] bread [illegible]

[illegible] mouth to mouth method of artificial respiration [illegible] be necessary to [illegible] other [illegible] such as the Holger Nielsen [illegible] [illegible] on Page [illegible] amyl nitrite [illegible]

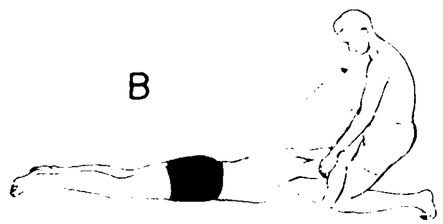
[illegible] resuscitation.

There is [illegible] premature [illegible] Breathing [illegible] hours of resuscitation in cases of [illegible] asphyxiation. [illegible] ordinary general tests for death should not be accepted. The doctor should make several very careful examinations to be sure specific evidence [illegible] present before the patient is pronounced dead and resuscitation is stopped.

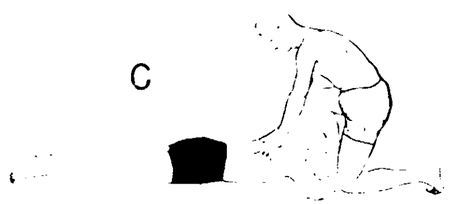
HOLGER-NIELSEN METHOD



The victim is placed in the prone position with the arms folded and the hands placed on top of each other. The face is then placed on the hands. The operator kneels on either knee at the victim's head and places his hands under the arms just above the elbows.



He rocks then forward at the same time that he rocks backward, drawing the arms toward him. Pressure is then released.



The operator then grasps the victim's arms and places them across the victim's chest.

He then leans backward, thus causing the victim's body weight to exert a downward and backward pressure on the chest. This forces the air out of the lungs. The elbows should be kept straight and the operator should gradually decrease the pressure on the victim's back.

FUMIGATION SAFETY RULES

1. Vacate entire building and adjoining buildings even if only part of building is fumigated.
2. Make personal inspection of entire premises immediately before releasing gas.
3. Eliminate all sources of ignition, including fires, pilot lights and electrical sparks.
4. Lock all exit doors and accessible windows; Place warning signs thereon. Guard premises adequately during fumigation and ventilation.
5. Always wear gas mask equipped with HCN canister: Keep mask in perfect condition.
6. Beat all mattresses, pillows, bedding, clothes and rugs: Test for presence of HCN before allowing tenants to use.
7. If in doubt, do not allow a dwelling to be occupied on the night of the day it has been fumigated.

AERO® HCN DISCOIDS

DANGER: POISONOUS LIQUID AND GAS
EXTREMELY FLAMMABLE
MAY BE FATAL IF SWALLOWED, INHALED OR ABSORBED THROUGH SKIN

Keep away from heat, sparks and open flame

Do not get in eyes, on skin, on clothing

In case of contact, remove contaminated clothing and wash thoroughly

POISON

This leaflet supplants and supersedes all previous literature pertaining to AERO HCN DISCOIDS.

NOTICE

DISCLAIMER

American Cyanamid Company warrants only that the material described herein conforms to the chemical description on its label and is reasonably fit for the use hereof when used in accordance with the directions for use.

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American Cyanamid Company
Agricultural Division
Princeton, New Jersey 08540

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