

## A Few Basic "At Home" Strategies for Survival Making an "At Home" Shelter

There are many things a person can do at home, in the event of a Nuclear or Biological attack on the United States. One of the best things is to just stay at home, for at least a month.

Your first, and cheapest, preparation might be to buy some rolls of plastic and duct tape. The simple act of sealing your doors and windows could afford you *some* protection from both dust-born Nuclear Fallout and Air-born Pathogens.

There are ideas from two separate books contained in this hand-out.

"Basic Nuclear War Survival", and "At Home", the last two chapters of the "SAS Survival Handbook". Note that these two chapters do not appear in the smaller SAS Survival Guide. This latter book is the small, pocket sized one many of us bought.

Also Chapter 5: "Contamination -Proofing Your Home" from "Bioterrorism : Secrets for Survival"

The following pages give you things to think about, and take prayerfully to the LORD.

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Note that this material does NOT appear in the smaller version John Wiseman SAS Survival Guide; ISBN 0 00 470 1674 (abridged, pocket sized), it is from:

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John " Lofty" Wiseman; The SAS Survival Handbook; ISBN 0 00 26531407, (unabridged) pages 551 to 556

# ***Basic Nuclear War Survival, SAS Handbook***

## **RADIATION**

Potentially harmful radiation is used to diagnose and treat illness and radioactive material is used to produce nuclear power. Exposure to x-rays must be carefully controlled. Technicians operating such equipment usually do so from behind suitable screens. Nuclear installations and the fissile materials they use present much greater dangers.

Nuclear radiation from fissile material can be tolerated in small doses -- a low level of background radiation was always present long before man split the atom. Radiation is measured in roentgens per hour (R) and, if a very small portion of the body is exposed, a healthy person can tolerate brief exposure to a charge of 5000R -- but a dose of only 700R to the whole body is lethal.

Nuclear power stations, research plants and nuclear waste processing plants use shields, special clothing and decontamination procedures to protect their staff and prevent contamination of others and the environment. But despite elaborate safety systems and controls leaks and accidents have occurred and the problems associated with the transportation and disposal of radioactive waste have not yet been satisfactorily solved.

In the United States and Britain each community near a nuclear plant has an emergency plan for dealing with a radiological incident. To find out about plans contact your local authority. Local radio stations would be used to issue emergency information and you could be told to evacuate the area. If not, stay inside as much as possible. Exposure to small emissions of radioactive iodine are treated with potassium iodine tablets which delay its absorption.

Anyone who may have been subjected to a radiation leak should wash the WHOLE body thoroughly with soap and plenty of clean water and seek expert help immediately.

## **NUCLEAR WEAPONS**

The offensive use of nuclear power is likely to be preceded by a gradual escalation of the military

situation. There is likely to be a period when those who wish could take positive protective measures. However there is no guarantee of warning and proper fall-out shelters cannot be erected rapidly. Many people believe that it is worth building shelters now as a precaution. Others, especially in target areas, may feel the whole operation pointless. Any who escape annihilation will need a survival mentality more than in any other survival situation.

## NUCLEAR EXPLOSION

The immediate hazards of a nuclear explosion are blast, heat and radiation. The severity of their effects will depend upon the size and type of weapon, distance or height of the explosion, weather conditions and terrain. Heat and blast are like those produced by conventional explosives, but many times more powerful.

0. **BLAST.** The detonation causes the initial shock-wave. Even more powerful is the compression of the air produced by the rapid expansion of the fireball. The wave of pressure traveling outwards from the point of detonation will collapse buildings, uproot trees and fill the air with-flying debris, well before the heat follows. Approximately half the total energy of the explosion is expended in this way. When the blast wave has passed, air rushes back to fill the void causing further damage. At distances where the initial blast has only weakened structures this vacuum effect will finish the job.

0. **HEAT.** The thermal radiation (heat and light) produced by a nuclear explosion reaches temperatures hotter than the sun and includes great intensities of ultraviolet, infrared and visible light rays. Close to the point of detonation all inflammable materials are ignited -- even vaporized. In the case of the Hiroshima bomb, exposed skin was burned at a distance of 4km (2 ½ miles). Today's weapons are MANY times that power and their effects comparably more extensive. Even seeing the flash of the explosion is likely to cause serious eye damage and burns to the skin.

0. **RADIOACTIVITY.** In addition to the thermal radiation, nuclear fission produces alpha and beta particles and gamma rays. Although radioactive fallout settles to earth, with the appearance of white ash or dust, this is the residue of destroyed matter not the radioactivity itself. That cannot be detected by human senses. A Geiger counter is required to register its presence, indicated by a dial or a sound signal which becomes increasingly agitated as the radiation increases.

**ALPHA PARTICLES** have low penetrating capabilities and it is easy to shield them off. They cannot penetrate the skin but they do present serious problems if ingested or inhaled.

**BETA PARTICLES** are only slightly penetrating and heavy clothing and boots will give full protection. On exposed skin they cause burns. If ingested they attack bone, the gastrointestinal tract, thyroid gland and other organs.

**GAMMA RAYS** are highly penetrating. They travel much slower than alpha and beta rays, damaging all body cells.

Common symptoms of exposure to radioactivity are nausea, vomiting, general weakness. Ulcer-like sores appear on the skin, which tends to take on a grey hue.

## RESIDUAL RADIATION

The initial radiation given off during the first minute of a nuclear explosion can kill -- but it lasts only a short time. Once the blast has passed, so has the initial radiation threat. However, exposure to residual radiation can be equally dangerous.

The amount of residual radiation depends on how the bomb was detonated. If it was high above the



Ice	2.00	6.6
Wood	2.60	8.8
Snow	6.00	20.3

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## DECONTAMINATION

If your body, or even your clothing, has been exposed to radiation, it must be decontaminated. Once in shelter scrape earth from the shelter bottom and rub it over the exposed parts of your body and your outer clothing. Brush it off and throw the soil outside. Wipe the skin with a clean cloth if possible. More effectively, if water is available, wash the body thoroughly with soap and water instead of soil.

## MEDICAL CARE

ALL wounds must be covered to prevent alpha and beta particles entering through them. Burns, whether caused by beta particles and gamma rays or by firestorm heat, should be washed with clean water and covered. Urine may be used, if no uncontaminated water is available. The eyes should be covered to prevent further particles entering and a damp cloth placed over the mouth and nose to prevent further inhalation.

Radiation affects the blood and increases susceptibility to infection. Take all precautions -- even against colds and respiratory infections.

# AFTERMATH

Unless stored in deep shelters, or with special protection, all foodstuffs are likely to have absorbed some measure of radioactivity. Be cautious of foods containing a high salt content, dairy products, such as milk and cheese, and sea foods. After tests it was found that food with salt and other additives had a higher concentration of radioactivity than food without them. The safest canned foods are soups, vegetables and fruits. Cured and processed meat are more readily contaminated than fresh. Bone absorbs the highest levels of radioactivity, then lean meat, with fat lowest.

## WATER

Unless it is from a protected source, do not drink any water for at least 48 hours after detonation. Avoid water from lakes, pools, ponds and other static surface water. Filter all water and boil it before drinking.

The following sources are the least contaminated (in order of least risk):

1. Underground wells and springs
2. Water in underground pipes/containers
3. Snow taken from deep below the surface
4. Fast-flowing rivers

Dig a hole by a fast-flowing stream and allow water to filter down into it. Scrape off any scum that-forms on the surface and scoop up water. Filter it through layers of sand and pebbles (dig deep to obtain these) in a can with holes punched in the bottom, or through a stocking. Boil in an uncontaminated vessel.

**Decontaminate utensils by washing thoroughly in fast flowing or boiled water.**

## ANIMALS AS FOOD

Animals that live underground have less exposure to radiation than those that live on the surface: rabbits, badgers, voles and similar animals are the best bets but, when they venture out, they too will be contaminated. However, such food sources must be made use of. You will increase your own contamination -- but the alternative may be to starve.

To reduce contamination from meat do NOT directly handle carcasses, wear gloves or use cloth to cover the hands while carefully skinning and washing. Avoid meat in direct contact with the bone. The skeleton retains 90% of radiation so leave at least 3mm (1/8 in) on the bone. Muscle and fat are the safest part of the meat. Discard ALL internal organs. Fish and aquatic animals will have a higher contamination than land animals from the same area. Birds will be particularly heavily contaminated and should not be eaten. However, eggs are safe to eat.

#### PLANTS AS FOOD

Root vegetables with edible tubers growing underground are safest -- carrots, potatoes and turnips, for instance. Wash them well and peel before cooking.

Smooth-skinned fruits and vegetables are next safest. Plants with crinkly foliage are the hardest to decontaminate, because of their rough texture. They should be avoided.

#### LONG-TERM SURVIVAL

Predictions of the long-term results on the environment of major thermonuclear conflict differ widely. The possibility of a 'nuclear winter', with consequent effect on climate and plant life far beyond strike areas, would make even subsistence agriculture difficult. In the short-term however, and in the case of limited conflict, much of the advice in Home Front will be relevant.

## ***Nuclear War Survival, Home Front***

You do not have to be miles away from civilization to be caught in a survival situation. Natural disaster, civil disturbance or military action could cut you off from all the usual services and food supplies. Until they can be re-established, you would be left to manage on your own resources and skills.

With no power supplies, central heating, hot water, lighting, air-conditioning and refrigeration would all cease. Battery radios and television would for a time give some news of the rest of the world, if the situation is not global, but post, telephone and newspapers would no longer be available. As mains water supplies ceased to function, so taps would run dry and toilets would become unusable.

In the countryside there would be natural resources to draw upon. In large cities shops would soon be emptied of food -- sold or looted -- and plants in parks and gardens would be rapidly stripped, once any private stocks had been exhausted. The population would have to make forays out into the countryside to survive, or abandon the town, if not in a siege situation. Suburban dwellers have more vegetable plots and open spaces to provide foodstuffs. They would be less dependent upon shops. Those away from major centers are more likely to have their own food stocks, because they cannot shop at will.

Most families have some food in store. It should be rationed and supplemented with whatever can be found.

## **FOOD STORES**

Storing food is a good habit to get into, especially if you live in an isolated place, which can become completely cut-off. If you have a year's food supply in store, and add to it as you use it, you will not only be able to survive the worst but will be able to live at last year's prices.

The stock does not have to be established in one go. Build it up gradually, taking advantage of special offers in supermarkets. Buy an extra tin or packet and put it by. Store your foods in a cool, dry, dark place and off the ground -- moisture and heat cause bacteria and molds. If stores are left on the floor insects and rodents will help themselves. Make sure that all containers are insect- and rodent-proof.

## **REMEMBER**

**Rotate cans, so that the contents do not settle, and separate. Label each can or packet with a color-fast waterproof pen, noting contents and date of storage. Use in sequence -- the oldest first. Store methodically and if a label falls off, you should still have a good idea of the contents.**

Choice of foods will depend upon individual taste, but straightforward products (corned beef in preference to beef stew and dumplings) will keep better and can be used in a greater variety of ways. Wheat keeps better than flour -- it is less susceptible to moisture, light, insects and temperature change. Wheat found in the pyramids was found in good condition after thousands of years. However you must grind it to make flour, so invest in a small hand grinder.

### **KEEP IT SEALED**

Screw-top sweet jars are ideal for storage and plastic containers with tight-fitting lids can also be used. Do not over fill them so that they distort and the lid does not fit correctly. Use adhesive tape to seal the lids. Reseal after using some but remember that once opened the contents will begin to deteriorate.

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### **RECOMMENDED FOODS / SHELF LIFE**

<b>Wheat</b>	<b>Indefinitely below 15 degrees Centigrade (65 degrees Fahrenheit)</b>
<b>Milk powder</b>	<b>2 years</b>
<b>Honey</b>	<b>Indefinitely</b>
<b>Egg powder</b>	<b>2 years</b>
<b>Salt</b>	<b>Indefinitely if absolutely dry</b>
<b>Canned goods</b>	<b>3-5 years (replace regularly)</b>
<b>Oats</b>	<b>Indefinitely</b>
<b>Cooking oil</b>	<b>2 years (replace regularly)</b>

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### **RATIONS**

Complete rations are available with various menus either freeze-dried or dehydrated. They are lighter and less space-consuming than canned foods. Freeze-dried are best for both taste and texture and retain minerals which are lost in dehydration. Although both need water for reconstitution they can, in dire circumstances, be eaten as a dry munch.

### **VITAMINS**

Multi-vitamin tablets are also a good investment. The body can store up to a month's supply of most vitamins, then health will suffer if they are not replaced. In stress situations they are more rapidly used up. The B family (and minerals, calcium and zinc) are first to go. Vitamin tablets do not have unlimited shelf-life -- check manufacturer's instructions.

### **OTHER FOODS**

Dried fruit and nuts are nutritious and should also be included -- raisins, sultanas and currants all keep well. Nuts in their shells keep so long as they are dry. Packets of dried salted nuts such as peanuts, brazils and walnuts, are highly nutritious.

Potato powder is a great filler for hungry stomachs and can be prepared in several ways to make it

palatable.

Brown rice has more nourishment than long-grain white rice which loses all its goodness when boiled.

#### STORE LOCATION

The cooler the storage area, the better the stores will keep a cellar is ideal but there may be a problem with dampness so keep all the stores off the ground and inspect them regularly. If there is a skylight in the cellar, cover it. The store is best kept dark.

An attic is also convenient for storage -- the stores are not in the way of day-to-day activities. However, it may get very warm in summer and access may be difficult -- especially if a ladder is the only means of entry -- which may be awkward when trying to rotate bulky stores. The roof is also a vulnerable position in most kinds of disaster situations. In an area where hurricanes can be expected an attic is not a good choice. In territory liable to flooding a cellar would be equally at risk. Under stairs is another area that may offer some protection, though perhaps limited space. Advantage should be taken of wherever is most conveniently available to store not only food but also medical supplies, disinfectants, cleansing materials -- and water. If you divide your stores into more than one area, each with a variety of items, you should be well prepared.

**ADD TO YOUR STORES:**     *Toothpaste and soap*     *Disinfectant and bleach*     *Washing powder*     *General medical supplies*     *Medicines: for dysentery, for stomach upsets, for allergies, general pain-killers,*     *Bandages and dressings*

#### PRIORITIES

In a domestic situation there is likely to be shelter, unless it has been totally destroyed, or the area has become a danger zone and evacuation is imperative. Damage can be patched up to provide some protection from the elements and more permanent repairs undertaken as soon as possible.

Water supplies are always likely to be a problem -- for even during a flood drinking water is scarce. Fortunately there are likely to be some immediate reserves on the premises and, with warning of a crisis, these can be supplemented.

Fire for warmth is less of a problem, since there will be burnable materials in the house and surroundings. Infection may prove the greatest danger and strict hygiene and sanitary practices must be enforced.

#### WATER

Although a family of four can use a considerable amount of water each week, only a small percentage of this is for drinking -- a requirement of about 2 liters (4 pints) per day per person. If warned of a crisis, fill as many receptacles as possible, especially in a hot climate. A bath holds many gallons; increase its capacity by blocking the overflow. Use dustbins, buckets, pots -- even strong polythene bags if they are only half filled and securely tied off

Store water in the dark. If light gets to it green algae will develop. Water is bulky and heavy. Do not store it in the attic or it may bring the ceiling down.

Even without advance warning there will be water in the storage tank, heating pipes, radiators, perhaps an aquarium, and the toilet cistern will hold another few gallons -- don't flush it. Outdoors you may have a swimming pool, water butts, or a pond -- even water from a car radiator can be utilized. Central heating water is usually treated with a de-oxygenizing agent and a car radiator probably contains anti-freeze, so water from these places is best kept for cleaning purposes. If it has to be used for drinking boil it, collect the steam in clean cloths and wring them out. Then re-boil. (Or, see Essentials.)

Boiled water tastes flat and distilled water has even less taste. It is easy to restore some of its sparkle by putting oxygen back into it: simply pour the water back and forth from one vessel to another. A small piece of wood charcoal placed in the vessel while it boils also helps taste.

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#### FILTERING AND STERILIZING

Filter and sterilize ALL water before using it for drinking. If circumstances make it impossible to boil water sterilize it with chemicals.

**FILTERING:** Allow water to stand in its container so that sediment settles at the bottom. Then siphon it into a filter made up of a nylon stocking (or other porous material) stuffed with layers of sand (bottom), charcoal and moss (top).

**STERILIZING:** Clear water: add 2 drops household bleach per liter (1 per pint) or 3 drops 2% tincture of iodine per liter (6 per pint)

Cloudy water: double the quantities of bleach or iodine

Large quantities: 1/2 teaspoonful bleach per liter (2 teaspoonful per gallon)

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#### COOKING IN WATER

Water in which food is to be cooked **MUST** be boiled for at least eight minutes, but water not boiled for as long can be used for heating cans of food provided it makes no contact with the foodstuff.

Stand the can in water, pierce a small hole in the top to avoid the risk of explosion and plug it with a twist of cloth so that water cannot enter the can. Alternatively, boil the water, remove it from the heat and place the un-pierced can in the water. This takes longer for the can to heat through.

#### WATER CATCHMENT

0. Catch all available rainwater. Break off lower sections of down pipes and divert the flow into a container such as a dustbin. Even if rainwater is pure, guttering may contaminate it -so sterilize.
0. Supplement water receptacles with tarpaulins or plastic sheets supported on sticks. Rinse between showers to reduce tainting.
0. Dig a hole and line it with a plastic sheet or concrete for water storage. Cover it to prevent evaporation and debris falling in.
0. If the local water table is high you may be able to dig down to water -- there may even be a well on your property which could be reopened.
0. Solar and vegetation stills (see Essentials) are other ways of obtaining water.

#### WATER CONSERVATION

Do not waste water washing clothes, other than underclothing. Never throw water away after use. Allow sediment to settle and it can be used again.

It is very important to wash the hands before preparing food, but the rest of the body can wait until it rains. The body produces natural oils and, as long as the pores are kept open, health will not be affected. You soon get used to the smell and social occasions are rare in a crisis situation. If showers are few and far between, use a damp cloth for a strip wash cloths left out on lawns or hushes over night may gather enough moisture for a wipe down without using up your water stores.

Injured persons must receive priority for bathing and all their dressings should be boiled regularly.

## **FIRE**

The warmth and comfort of a fire are great morale boosters, but its most important use will be for boiling water and preserving food. These must take priority in the use of fuel.

Blocked fireplaces should be opened up again and chimneys checked for obstructions. If they are not clear there is considerable risk of setting fire to the chimneys themselves and thus to the house.

#### TO CLEAR A CHIMNEY

Tie a holly bush or a similar shrub to a long rope and from the rooftop lower the rope down the chimney (a stone tied on the end will ensure it drops). Now pull down the holly bush and it will clear the chimney.

#### IMPROVISED FIREPLACES

Where there are no fireplaces metal containers, metal dustbins lids and central heating radiators can all be used to light a fire on. In flats with concrete floors a fire could be lit directly on the floor. If you have a barbecue stand make good use of it.

Never leave a fire indoors unattended. Even one in a proper grate should be allowed to die down for the night, if no one is going to stay up to watch it.

#### FUEL

Start with garden furniture, trees, shrubs, bean sticks, swings, ladders, tool handles. When these run out start on furnishings. Carpets, curtains and cushions will all burn. Cardboard, books and rolled up newspapers will also give off a surprising amount of heat. All kinds of vehicle fuel can also be burned as well as the conventional heating and lighting oils.

**WARNING** Many modern fabrics and furnishings, especially PVC and foam-block furniture, produce poisonous gases when burned. If burning these items make a fireplace in the garden or, if forced to burn them in a flat, make the fire near an open window. Cover the face with a damp cloth when you need to go near the fire to tend to it and things being heated on it.

## FOOD

- 0. Check on all the food in the house and ration it immediately.
- 0. Use the perishable foods first. Fatty foods are the first to deteriorate and canned foods the last.
- 0. Remember that, once electric power fails, the refrigerator and freezer cease to function -- though they may take some time to defrost, if you open their doors as seldom and briefly as possible.
- 0. Boil milk and it will keep longer.
- 0. Boil eggs or coat them in a layer of fat -- if you have izinglass (a traditional method of preserving fresh eggs) simply immerse them in it.
- 0. Cook meat, wrap it in cloth and bury it in the earth. Cook pork first (which has the highest fat content), then lamb, then beef (which is the best meat to preserve).
- 0. Once meat has been cooked and allowed to cool, do NOT reheat it or you may risk food-poisoning.
- 0. You can only cook so much at a time, so leave the rest in the refrigerator or freezer while they are still cool places.

#### FOOD FROM THE GARDEN

The vegetables with four petals, including all the brassicas, from wallflowers to cabbages are edible. Hollyhocks, though not very tasty, are nutritious. Worms, slugs and snails are also edible. AVOID bulbs such as daffodils, tulips and aconites which are all poisonous.

#### FURTHER AFIELD

Explore parks and open spaces for other vegetation and for hunting and trapping wildlife. Birdlife in

cities -- especially pigeons and starlings, will often fill the plate, especially if you bait snares and nets. (See Traps and snares in Food.)

#### CLOSER TO HOME

Beware of houseplants -- some of them are poisonous, especially the dieffenbachia and philodendron -- though orchids are good to eat.

If food is short there will be none to spare for pets and you CANNOT afford to be squeamish. If the aquarium water has to be drunk don't waste the fish. In fact they'll probably be the easiest to eat even if you don't need the water. The cat is next in the pot. Once dressed it will be hard to distinguish from rabbit. Gerbils, hamsters, rabbits, budgerigars and parrots can all be added to the diet and, unless the dog is an exceptionally good hunter, it should go too.

#### PRESERVING FOOD

For methods of smoking, salting and making pickles and chutneys see Food Preservation in Food.

When the fridge no longer functions remove the motor, cut a hole in the bottom, place it on some stones or bricks and with a fire beneath use it as a smoke-house.

## SHELTER

The first priorities will be a sound roof over your head and a stable structure. Clear any debris and ensure that there is nothing which could still collapse or fall from above and cause injury. Use slates, tiles and bricks from other buildings to ensure that at least one building is sound.

**IN COLD WEATHER** Conserve resources by living in one room, choosing a ground floor room with a southern aspect (if you live in the Northern Hemisphere). Block all drafts and avoid opening the door unnecessarily. If there is a fire burning, make sure that there is adequate ventilation to avoid asphyxiation or carbon monoxide poisoning. Wear warm clothing to help conserve fuel. The more people in the room, the higher the temperature. Rest and keep physical exertion to a minimum.

**IN VERY WARM WEATHER** Use upstairs accommodation and spread out. Open windows on the downstairs windward side and open all windows on the lee side upstairs. Leave all the doors open and a cool breeze will blow through the house. Rest during the day and do any necessary work at night.

**MOVING** If the house proves beyond repair, or other pressures force you to evacuate, take essential items -- food, blankets, tools, medical supplies, containers for water and materials suitable for shelter construction -- if they are not likely to be available. Use a pram or a shopping trolley as transportation. Either find an empty house or building, or prepare to set up camp elsewhere.

## HYGIENE

Sanitation is very important during the aftermath of any disaster. Open sewers, contaminated water and the build up of rubbish all help to cause and spread disease. Germs carried by rats, fleas and other insects, rapidly multiply. All kinds of waste should be carefully disposed of and all the procedures described (see Hygiene in Camp craft) should be adapted to the doorstep situation.

#### EXCRETA

Urine is sterile but if large amounts accumulate they smell and attract flies. Use the 'desert rose' urinal, of the kind described in Camp craft. Keep the tube covered. If not used directly, pour all collected urine down the tube.

Build a latrine (again see Camp craft), far enough from the house not to be smelt but near enough to be handy for 'emergencies' -- there will be many such emergencies in a survival situation. A box with a hole cut

in the base can be used as a thunder box. After use, if there is water available, wash yourself rather than using toilet paper. Wash the hands thoroughly afterwards.

Fit a lid to your thunder box, pile earth around the bottom and then you will contain the smells and keep out flies.

Move all muck with a shovel and avoid hand contact.

#### ANIMALS

Animals pick up diseases which can be transmitted to humans. If you handle animals, make sure you have no breaks in the skin -- or wear gloves. Infection can enter through the smallest of cuts. Cook all meat thoroughly.

#### KITCHEN WASTE

All biodegradable waste should be stacked in a corner of the garden and composted to enrich the soil. Compost heaps are also a great source of worms, which will add protein to your diet.

However, there should not be much kitchen waste. Do NOT peel potatoes,-- much of their food value is in the skin. The outer leaves of cabbages which you once discarded, will be edible if you cut them up small.

Non-biodegradable waste -- cans and plastics that are not useful in some way -- should be burned, flattened and buried. This stops them attracting flies. In warm climates burn ALL waste. Put all the ashes in a pit.

#### FOOD DISEASES

Salmonella and shigella are diseases transmitted through the oral-anal route, by contaminated hands.

Sores on hands can be a source of entry for staphylococcal food-poisoning with severe stomach pains, diarrhoea and dehydration.

Clostridium botulinum, is a frequently fatal bacillus, which can be produced when canning at home if the temperatures are not high enough - it grows only when oxygen is excluded. There is no reliable way of determining whether food is contaminated so TAKE GREAT CARE if you do your own preserving. A related bacillus causes tetanus.

#### COMMUNICABLE DISEASES

Living in close-knit groups after a disaster increases the risk of passing on disease. Good personal hygiene -- as good as possible -- can reduce the threat. Isolation of patients with colds or fever is advisable.

Seal dressings and discharges in a polythene bag and burn immediately. Dispose of all feces and urine in the field latrine -- and regularly boil the container used for their disposal.

#### PERSONAL HYGIENE

Wash with sand if there is no water available. Don't June 10, 2001bite your nails -- however stressful conditions may be -- or put the fingers to the mouth. Don't pick scabs or sores and keep them covered.

Change underclothes regularly and wash them (but don't use drinking water to do so).

#### SOME USEFUL HERBAL PREPARATIONS

Strawberry roots contain a descaler to clean teeth.

Delphinium seeds can be crushed to treat head lice.

Birch bark can be distilled to produce a tar oil which soothes skin complaints.

Lavender makes a decoction to clean the skin.

See also Natural medicine.

# Bioterrorism : Secrets for Survival

## Chapter 5: Contamination-Proofing Your Home

By Duncan Long (co-authored by S. Spencer Jones)

***"A major biological arsenal, with trillions of bacteria - enough to wipe out the entire United States population - could be built with under \$10,000 worth of equipment in a room 15 feet by 15 feet. And, unlike nuclear materials, we have no way of detecting it until it 's released into the air. " -- Kathleen C, Bailey, Assistant Director of the US Arms Control Committee.***

Ideally you would evacuate from an area that was under terrorist attack with biological weapons. However that might not be possible. If, for example, you were in an urban area where large numbers of people tried to escape at the same time, gridlock might make it impossible to leave the area right away. Too, there might not be any indication how wide-spread the problem was; if large numbers of terrorists were operating in concert, you might easily leave one area of contamination only to enter another. Not only that, the chances would be good that some of those escaping a contaminated area would bring the disease along with them. **The worst place you could be would be in a refugee camp that had a plague spreading like wildfire through it.**

If you are forced to hunker down and stay in a contaminated area for a period of time, a protective suit and mask can give protection only for a limited time. In such a situation, you must eventually get into an uncontaminated area to eat, sleep, and tend to other callings of nature. Keep in mind also that a protective suit will eventually fail; **you must minimize your time in a contaminated environment if you are to improve your chances of survival.**

The easiest way to reach a 'clean' place is to get out of the contaminated area. Since biological weapons will usually be used on small areas where terrorists can kill large numbers of people, evacuation will usually be the best choice to make in escaping contamination. If you were on the outskirts of such an area, walking or riding out of the contaminated area might be an option.

But if biological weapons are used over a large area, or if the area you're in has been temporarily quarantined by the authorities to keep the disease from spreading, you will have no choice but to get by the best you can. ***In such a situation, the ability to create a shelter to protect yourself from biological agents until the quarantine is lifted or help arrives would be essential for your survival.***

While ignoring the civilian population, our government has developed shelters for our military to use in such an attack. These generally operate on "positive air pressure." This system works like a tent that is kept inflated by pumping air into it. The air is brought in through filters to remove biological contaminants from it. The positive pressure inside the tent forces air through any holes that might develop, making it impossible for a biological agent to penetrate the system. Unfortunately such shelters are too expensive for most civilians to purchase and are often not made to last or to be operated without heavy motor-driven equipment and extensive maintenance.

That said, many homes and offices are pretty air tight, in part due to better building techniques as well as because of attempts to conserve energy. This means that it is practical to seal off a room in a building and transform it into a biological agent-proof shelter. We will look at that option in just a moment. But first, you should know that you can help protect your entire home or office from biological contamination by installing a good HEPA filter in your forced air heating/cooling system. The following sections will discuss a number of effective filter options that will aid you in protecting yourself, your family and your home in the event you are forced to stay in a contaminated area.

# HEPA: A Key Survival Tool

The key ingredient for protecting your home or office is to make sure you have a filter for your forced air/heating system that is capable of taking out particles the size of biological agents. Viruses are the smallest of particles that might be employed as a biological weapon, with all other organisms being larger than viruses. Viruses range in size from 0.01 to 0.27 microns in diameter. If a filter will remove viruses, it will give protection against all other biological weapons.

Finding a filter like this may seem impossible. In fact, it's possible to make an off-the-shelf filter do the job for not too great of an expense (more on that in a moment). The best commonly available commercial filter (the HEPA filter) is designed to have a 99.97 percent efficiency at removing particles of 0.3 microns from the air. While logic would dictate that such filters wouldn't be as efficient at removing smaller particles or might even allow them to penetrate the filter, in fact, this logic is false. In what is a bit of a paradox, these filters actually are MORE efficient at removing particles that are smaller than 0.3 microns as well as particles that are larger. Such a filter is just what is needed.

HEPA (High-Efficiency Particulate Air) filters are designed for use in industry or medical work and also used by hay-fever sufferers to remove fungus and pollen from the air. Because of the hay-fever and allergy problems many people in the US have, **most hardware stores now carry HEPA filters**; you can probably find one at your local "True Value" hardware store, or even a local Wal-Mart.

HEPA filters must be certified in order to display the "HEPA" name. That means when you purchase a HEPA filter, you should be sure to inspect it carefully for this certification. This is one place where purchasing a name brand product is a good idea; you don't want to save some pennies on an off-brand that may have fudged on its certification. Also be sure to avoid "near-HEPA" filters which come close to the performance of the HEPA filter but aren't as good -- you could need every bit of performance a filter can deliver during a Bioterrorism attack. In short, when you buy a HEPA filter, buy the best your source has to offer.

When placing a HEPA filter in a forced air furnace or air conditioning system, you can greatly improve its protection value by making sure air can't bypass the filter around its edges. This means you'll have to seal around the edges of your filter once it is installed. But keep in mind that such seals need to be made in a manner that permits quick replacement of the filter. A malleable material like plumbers putty, or even plain old duct tape or similar materials can be used to seal around the edges of an installed HEPA filter, yet still allow it to be easily removed and replaced later.

Since the time of a biological attack is not likely to be known in advance, it would be a good idea to stock up on a number of HEPA filters, and start using one now in your furnace/air conditioning system if you have a forced air system in your house. This would allow you to filter dangerous pathogens from the air before they enter your home, even if you weren't aware that an attack had taken place, giving you at least some extra level of protection. Since infection is not likely in a healthy person until a given level of biological agents are breathed in, having a HEPA filter in place might make the difference between inhaling just a few spores and surviving, or inhaling a lethal number and dying. In short, using a HEPA filter is a good way to buy yourself a little extra time should a surprise attack occur, and a great way to help protect your house during the aftermath of such an attack.

If a HEPA filter is not available (or you find you can't afford one), there are some alternatives which aren't quite as effective. In case of a biological attack, a standard furnace filter for your heating/air conditioning system will help, particularly if it's coupled with several layers of a heavy bath towel to form a make-do filter. By

doing this, you can create a filter which can remove 85 percent of all particles in the 1 to 5 micron range. While this won't give full protection from some viral agents, it would be effective against many of the larger bacteria, rickettsia, and fungi biological agents.

Another good choice for your heating/air conditioning system is a disposable, pleated air filter. Choose one which meets the US AHRAE standards and would ideally have 2-inch pleats. A 19-1/2-inch square filter like this will remove over 90 percent of particles 1 to 5 microns in size while offering less air resistance than the furnace filter/bath towel arrangement. While costing more than the furnace filter, it will greatly outlast it making the need to change the filter less of a problem.

With good filters in place, your air system can now be used to pressurize your house so that biological agents are unable to penetrate it from other areas such as around the door jams and windows, or through attic air vents or appliance ventilation ducts. **IMPORTANT:** In most cases, your heating/air conditioning system will need a fan capable of driving 300 cubic feet per minute through the filter, and will also need to have the intake port located *outside* the house rather than in the basement. Positive air pressure can only be created when the intake port is located outside the home, bringing outside air into the home to create a positive air pressure. Intake ports located inside your home can only re-circulate air already in the home. This will not do the trick. Unfortunately, some of the forced air/heating systems in some homes or offices aren't set up with outdoor intake ports. If this is the case in yours, you may discover that your system can be effectively modified with a few adjustments. You would need to consult your local HVAC (heating, ventilation and air conditioning) company to handle such a modification.

If you are handy with such things, you could also create a squirrel cage fan/filter system for emergency use. It could be housed in a plywood box with caulking compound sealing it to keep it airtight. If you are not handy, consult your local HVAC company (ask to speak to an installer) and tell them what you have in mind. For the most part, however, using your forced air heating/air conditioning system with a good HEPA filter installed as described above is your best bet for creating the kind of positive air pressure needed to keep biological agents from penetrating your home (or office) through areas around your door jam, your windows, your appliance vents, etc.

**Keep in mind that if you do not think you can prevent leakage from around your HEPA filters for any reason, creating a positive air pressure will not work. You will only end up sucking large amounts of biological agents into your home or office, and spreading them throughout. The air brought in from the outside must be effectively filtered. If you can't do so, then your next best option is to simply make sure your house is well sealed from the inside and the outside as described in the section directly below, and then create a "safe room" or "sealed room" as described in the section directly afterwards.**

## **Sealing Your Home to Prevent Air Leakage**

In a fairly tight house, the system described above will work even when a 25 mph wind is blowing against the house. At higher levels of wind, the house may start to leak air from other areas. And if you are not able to create a positive air pressure system in your home, air leakage into the house is likely even on non-windy days. This is a serious problem, because in the initial stages of an airborne terrorist biological attack, literally billions of spores will be in the air. **You do not want them seeping into your home via air leaks.** This makes it imperative to shore up areas of your home (or office) where excessive air leakage could bring in biological agents during a terrorist attack on U.S. cities. Fortunately, there are several ways of combating air leakage.

One way to make the house more resistant to air leakage is to seal the house from the outside very

carefully with caulking (particularly around windows) so that it can withstand greater wind forces without leaking. Much of this sealing can also be done ahead of time and will give an added benefit of energy savings in the here-and-now. Or, you can wait until the threat of a terrorist bio-warfare attack has become a reality, and hope you have enough time to get the job done before your specific area is contaminated.

Occasionally you will hear of a house that is sealed too well. The occupants then suffer from "out gassing" of plastic materials in the house, carbon monoxide from kitchen ranges, or other sources of air pollution. But according to current experts on energy efficiency, it's nearly impossible to get a home too tight; this is generally only a worry with very small houses being heated by a system that isn't properly vented. This means that if you want to prepare beforehand for a biological attack, you can pretty much do so without fear of creating other health problems. The cost for "tightening" an average home is about \$50 if you do it yourself; and you'll get the money back in energy savings in a year or two at the very most.

The first tool you'll need is a caulking gun and a number of tubes of caulking. Latex and butyl rubber caulks are inexpensive and can even be used indoors (remember, too, that butyl rubber offers excellent protection from chemical agents if that is a consideration). Or, you can use silicone caulks for longer caulk life outdoors, or the for greater joint flexibility between two different building materials. If you have large cracks or gaps in the sheathing of your house, then you might consider filling them with "expanding foam caulk," available in simple-to-use spray cans, to augment your other caulking chores. (Note: All of these supplies are available at your local hardware store.)

**Be especially careful to caulk the areas around all window and door trims very well. Indoors, hit the window and door trims again, and be sure to caulk around the molding too.**

Weather stripping can also be used to slow air leaks between fixed and moving parts of your house. Doors, windows, and attic access panels are all good places to use weather stripping. This comes in a variety of styles: felt strips, foam tape, rubber extrusions, folded metal/vinyl strips, door "threshold sweeps," etc. All of these can all help you get the job done, depending upon the needs for your specific house. Don't skimp on the doors since the weather stripping material there will get a lot of wear and tear in day-to-day use. Some doors may need to be taken down and planed to provide a space for the weather stripping, and to give a tight fit.

Again, if you are not handy, call in an experienced local handy-man and explain what you want done. They'll be happy to do the job for you.

One area of the home where large leaks may occur, which is generally overlooked by most people, is in the electrical outlets located throughout your house. Electrical plugs located on the inside of your house's exterior walls are most vulnerable to air leakage. There are several ways to effectively seal these outlets from the inside to prevent contaminated air from seeping into your home during a biological attack. One is to simply remove the socket plate and use expanding foam caulk to fill in the area around the electrical plugs. A better way is to purchase a foam gasket designed just for this purpose, install it behind the plug, and then cover it with the socket face plate. Again, your local hardware store is the best source for these supplies.

Installing exterior storm windows will also help decrease unwanted air leakage into your house. Plastic film "interior storm windows" will add to the effectiveness of the storm windows or may be used instead of them if you're in a bind for cash. Currently, kits of clear plastic which will cover one to five windows are available at many hardware stores. These allow double-stick tape to be applied to the window trim or wall (the wall gives more complete sealing) and then the plastic sheet is placed over the window- and held in place with the tape. An electric hair dryer is used to heat shrink the plastic sheet into place. This is a quick and easy way to give your home or office a significant amount add protection against contamination from airborne biological agents.

**In an emergency situation where time is of the essence, you can use duct tape and plastic sheets -- even large plastic garbage bags would do the trick -- to seal windows and doors in order to limit the amount of air leaking into your house.**

## **Creating a "Sealed Room" or "Safe Room"**

For maximum protection against biological agents in the home (or office, if you happen to get trapped at work when a terrorist biological attack takes place) it is recommended you do as the Israelis do and create a "sealed room" or "safe room." If you plan in advance and keep the proper materials on hand, you can create a sealed room in a very short period of time during an emergency. Large, clear plastic sheeting can be employed for this purpose. This sheeting is currently available in limited quantities at most hardware stores where it is sold for use as a barrier between the earth and concrete foundations, or for construction of inexpensive greenhouses. But keep in mind that during an emergency such as a terrorist biological attack on U.S. cities, word will spread quickly and supplies of plastic sheeting will dry up almost overnight. In the event of an attack on your city, it is most likely that all stores will be closed anyway. ***So purchasing these materials now -- in advance of the anticipated crisis -- is the absolute wisest move you could make.*** Measure the room you've chosen for your "safe room" or "sealed room." (see instructions for which room to choose, below), and purchase enough of this plastic sheeting to completely cover the room -- walls, ceilings, floors and then some!

By thoroughly covering the walls, ceiling and floor inside a room with this plastic sheeting, and then sealing the seams between sheets with packaging tape or duct tape, you can quickly create a very airtight shelter. If necessary, you can use a staple gun, push pins, or other fasteners to keep the plastic sheets in place on the wall and ceiling; once in place, cover the staples, pins, or other fasteners with duct tape or packaging tape to minimize the chance of tearing or having air leak in from the holes. Because the vast majority of air leakage will most likely occur around doors leading to the outside, and around exterior windows, it is wise to choose a room that has no doors leading outside the home, and only one -- or even no -- windows. If your home or office does not have any windowless rooms, be sure to tape the plastic sheeting very securely over the window so there are no leaks from the outside possible. As mentioned earlier, if you can safely spread caulking around the entire outside and inside of the window to seal all cracks, it would be wise to do so -- however, keep in mind that in the event of a terrorist biological attack on your city, you will want to dramatically limit your personal exposure outside of the house. This is something you need to do in advance of a terrorist biological attack, if at all possible.

It is also extremely wise to choose a room that is on the "downwind" side of your home as your "shelter room" or "sealed room." If the room you've chosen is on the "downwind" side of your home, the structure of the house itself will block most of the air leakage from coming into the room. **In such a case, a single room lined with plastic sheeting would give a very high level of protection -- much more so than an entire home or apartment, no matter how well you have sealed up the doors, windows and vents.** And again, the sealing of a room with plastic sheeting can be done rather quickly upon news of a terrorist biological attack in your area -- as long as you already have the materials and supplies on hand to take care of the job. Don't wait until it's too late. Get these materials now while there is still plenty of time.

Be sure to store water in the room you've chose for your "sealed room." A rule of-thumb figure for water needs are 2 quarts (a two-liter soft drink bottle works well for this purpose) per day per person at a minimum. Remember that it's always better to have too much water on hand than not enough.

If you drink soda pop or any other products that come in plastic containers, carefully rinse the empty

containers out and use them to store water. Two liter pop bottles are probably the best since the containers are tough and easy to move and handle. Plastic milk containers work only for a very short time; they tend to split easily even when new, and over time the plastic deteriorates so they have to be replaced. Best advice is to avoid plastic milk containers for water storage.

Ideally, you will also want to store food such as canned goods in your "sealed room" so there will be less need to leave the room and risk possible exposure to biological agents in other areas of the house. Food that can be eaten with a minimum of preparations would be ideal in such a situation. Tins of tuna, canned veggies that can be eaten cold, etc. ***Avoid running a cooking stove or even using candles in such a closed in area as the amount of oxygen and the build-up of carbon monoxide would likely present a significant danger to you in such a tight space.***

Setting up a "porta pot" (available in most camping/outdoor supply stores, or via mail order through **The Sportsman's Guide** -- see Appendix B) in a closet in your sealed room would take care of your bathroom needs for some time. Many of the newer store bought models have disinfectant built into the base so you can go for quite some time without stench before having to empty it. Having your family "camp out" in a room so equipped would greatly reduce your chances of becoming infected with pathogenic microorganisms during the initial stages and aftermath of a biological attack on your city. Keep in mind that your sealed room is simply a place to gain added protection for a few days if necessary, until you can leave the contaminated area altogether.

Other items to consider storing in your sealed room in advance, or bringing into your sealed room during an emergency, would be:

Flashlight and batteries for light, since your local power company will probably fail for at least a short period of time in the case of a direct terrorist biological attack on your area.

Can opener for canned goods; plastic cups, plastic silverware and paper plates for eating and drinking; plastic garbage bags with "twist ties" for trash.

***A home colloidal silver generator is an absolute must for your sealed room. It is your first line of defense against the coming infectious disease crisis.*** This will allow you to make as much colloidal silver -- the world's most powerful natural antibiotic, which even kills anthrax -- as you need during a crisis to help prevent microbial infection, as well as to purify drinking water while you are waiting for the 'all clear' signal. An innovative company called Silver Bullet Enterprises distributes the very best lightweight (about the size of a pack of cigarettes) battery-operated colloidal silver generator we have ever seen. Do not fail to read Appendix AI for a detailed description of this fascinating little unit that could literally help save your life during the coming infectious disease crisis; and see Appendix B for pricing and ordering information.

A battery operated radio (preferably short wave, as your local radio stations will probably not be functioning in the event of a terrorist biological attack on your area), so you can tune in to government reports, and find out when it is safe to go back outside again. ***Since you cannot always depend upon batteries, a simple "hand crank" or "wind up" radio (i.e. that operates without conventional batteries because it generates and stores its own electricity when you rapidly crank a small handle twenty or thirty times) would also be an ideal tool to have on hand inside your sealed room.*** (See paragraph directly below.)

A very interesting company we've recently discovered, called Paradise Distributing, sells the phenomenal Baygen Emergency Wind-Up Powered Radio and Baygen Emergency Wind-Up Powered Lantern. NO ELECTRICITY AND NO BATTERIES ARE NEEDED TO RUN THESE UNITS. These unique products operate simply by winding a built-in hand-crank dynamo generator for 20 or 30 seconds. Power is then stored inside,

and is converted to electricity when you switch the product on. Unlike other wind-up radios, the Baygen Emergency Wind-Up Powered Radio includes shortwave (3.3 to 12 Mhz), as well as full AM and FM bands. It can be powered three ways: (1) you can use the emergency wind-up power dynamo which gives you 30 minutes of radio play after just 20 seconds of winding, (2) or you can use a 9-volt AC/DC wall adaptor for constant power whenever electricity is available, and (3) you can also use a portable Solar Panel/battery charger that converts sunlight into electricity and stores it in the radio for later use. The Baygen Emergency Wind-Up Powered Lantern uses the same wind-up technology as the radio for supplying all the emergency light you need in crisis situations. Be sure to read more -- including pricing and ordering information -- about these extraordinary emergency preparedness products in Appendix B, under Paradise Distributing.

Another important item to have inside your sealed room would be a cellular phone. In the event of a terrorist biological attack on your city, it is likely your local phone company will be completely shut down. Electrical power to your city may even be out for a period of time. But the cell your cell phone calls go through may be far enough outside of your area to still be operating. If so, having direct contact with people you know and trust from outside of your area could be a real life saver. They can tell you what's going on, what the government response to the emergency is, how other cities around you are faring, how long the crisis is expected to last, whether or not your city has been quarantined, when your city is scheduled for government clean-up crews or evacuation, whether or not roadways into and out of your city are open, and much more vital information.

Another form of communication you might consider having in your sealed room is a CB radio. Although the range on these is very short (two to fifteen miles), they have several distinct advantages over a cellular phone: One, you can listen in on the conversations of other people who are using CB during the crisis, which could help you obtain vital information. Two, if cellular and conventional telephone systems go down, it is likely that at least some government agencies will be using some form of CB communication, which you may be able to tune into by adjusting the frequency band on your radio. Three, you can broadcast a distress call to a wide range of listeners (i.e., everyone else that has CB), rather than to just one individual. Four, you are not dependent upon the local phone company or cellular phone company to stay up and running during the crisis; as long as batteries to your CB hold out, you have a viable method of communication. Hints: Be sure to stock plenty of extra batteries for your CB, in case you are stuck in your "safe room" for several days or even several weeks. Also, purchase a CB that can run off batteries as well as off a simple plug-in AC/DC power converter. If the power remains on, or comes back on after it's been out a while, you can maintain your CB's maximum broadcasting range and prevent wearing down your batteries prematurely by using the power converter instead of the batteries.

This manual contains more information on communication devices in the section below entitled "Determining When It Is Safe to Come Out."

## **The Vacuum Cleaner Trick**

By the way, if you have power to your home or office you can create an effective improvised "quick-and-dirty" biological agent filter and positive air pressure system for your sealed room with a simple tank-type vacuum cleaner. This is best done during the initial hours of an airborne terrorist biological attack in your area, when the danger is highest because the spores or other forms of pathogens are still floating in the air and have the best opportunity of penetrating your home through cracks and crevices. The best vacuum cleaner to use is the kind that comes with a HEPA filter already installed in it. That's because exhaust air that

passes through the cleaner will be free of nearly all spores or other dangerous materials. Many newer models of vacuum cleaners come with certified S-Class HEPA filters and could be used to build an "off-the-shelf" filtration and positive air pressure system in an emergency.

With a little extra effort, even a vacuum cleaner without a HEPA filter can be transformed into a biological agent filter and positive air pressure system. The trick is to fill the vacuum cleaner bag with fibers that are small enough to filter out spores and other agents. You can do this by extracting lint from a clothes drier. Filling the vacuum cleaner bag with such lint will transform it into an efficient filtration system. The best way to use a vacuum cleaner filtration/positive air pressure system would be to place the vacuum cleaner outside your shelter area, connect the hose to the exhaust port and run the hose into your protected area. (You would have to cut a hole through the bottom of the door to your sealed room, or through the wall, to run the vacuum hose into the room. After running the vacuum hose through the hole, be sure to thoroughly, seal around the hole with duct tape so that you do not have leakage of air into the room when the vacuum cleaner is not running.) With the vacuum turned on, clean filtered air would be effectively vented into your "safe room," creating positive air pressure in the room, and thereby preventing airborne microbes outside your home from being able to penetrate in through cracks or crevices into your sealed room. It would be wise to leave the vacuum running for a full 24 hours during the initial stages of a terrorist biological attack on your area. This way, you have positive air pressure in your sealed room during the worst part of the attack, when the spores are still airborne and the danger of having them seep into your room through cracks or crevices is highest.

However not all vacuum cleaners can be used this way. When purchasing a vacuum, be sure the hose can be connected to the exhaust port of the unit. Or, in a pinch, you could connect the vacuum hose normally, place the hose outside the shelter and have the vacuum cleaner running inside the shelter. thereby venting filtered air into your living quarters and creating positive air pressure. The catch to this latter system is that you end up with the filter -- and therefore any spores or other dangerous pathogens -- inside your shelter area with you. In such a case, obviously great care would need to be exercised to prevent leaks or damage to the filter. And equally important, the system should never be opened or the filter replaced while the cleaner is inside your safe room.

Once set up, when the vacuum cleaner is running it should offer at least 99.9 percent protection from 2 micron sized particles -- roughly the size of anthrax spores.

This one trick alone could save your entire family's lives if you become stuck in a contaminated area for any length of time. It is a commonly known "positive air pressure" trick in Israel, where the citizens live under the threat of terrorist biological attack on a daily basis.

One more important note on this issue: Because you can't see biological contaminants, it is easy to forget they exist. But doing so can prove fatal. So when you remove the filter from the vacuum cleaner, take care to remember that it will be full of dangerous pathogens; be sure it can be disposed of without contaminating you or the area it is in. Burning is most ideal for this. When removing a contaminated filter, be sure to observe all decontamination procedures (see chapter 6) and wear a protective mask, gloves, boots, and suit.

***And finally, always remember that people leaving your "safe room " or sealed room should don their mask and protective suits before going out. When returning, the suits and mask should be removed just before re-entering the safe room.*** Ideally anyone entering would be carefully decontaminated as outlined in Chapter 6 of this manual. The chances of dragging contaminants into the safe room is great anytime someone enters from outside its protective area. **For this reason trios outside the safe room should be kept to a bare minimum.**

# Determining When It Is Safe To Come Out

Should you be forced to "hunker down" in your home or office due to a terrorist biological attack on your city, knowing when to leave your shelter could be key in your survival. Leaving too soon could easily expose you to the very pathogens you're attempting to avoid. Leaving too late might leave you in the middle of an anthrax-contaminated no-man's land with no way to travel out because all rescue workers have written the area off. How do you figure out when to make your move?

Fortunately there are several routes you can take to avoid making potentially fatal mistakes. The key things to know are: what 's going on outside the area you 're in, whether or not people are being evacuated from your area by the authorities, and if so, where they are being evacuated too.

Having a way to communicate with the outside world (or at least obtain news broadcasts) is the #1 key to gaining this vital information. To do this, you need to have the items mentioned several sections above (i.e., battery operated or "hand crank" AM/FM radio; conventional telephone; cellular phone; CB radio), and you need to have them already purchased in advance of the crisis.

If the disaster is very localized, a phone would be extremely useful for communicating with those outside the danger area. A call to a relative or friend could enable you to pick up key information that will help you to understand what's going on, and help you plan on making your escape or deciding whether you should stay put for awhile longer.

That said, the telephone is not a sure-fire solution. For starters the high telephone traffic that would occur during such an emergency would almost guarantee that lines would be jammed. Furthermore, unless the central switching board was located outside the area of contamination, it seems likely that the system would have to operate unattended. While much of a modern phone system is automated, expecting it to operate for days without being attended to is unrealistically optimistic. Best advice here is to hope the phone will work but don't depend on it when you're making your plans.

Cellular phone systems, CB radio, HAM radio, and the like might also be useful for contacting the outside world. However like the telephone it is likely that heavy traffic will initially overwhelm these systems as well. Furthermore, keeping such equipment running could be a problem since local electrical systems will undoubtedly go down within days, if not hours, of a terrorist attack on your local area. Having a battery operated CB radio will at least give you the option of listening in to other people's broadcasts and conversations, even if the airwaves are so tied up initially that you can't broadcast out. (By the way, Radio Shack sells several hand held, rechargeable battery operated "CB walkie-talkie" units with 40 channels and full legal power, that includes a "high/low" switch which helps you conserve batteries. Use high power for maximum range, or select low power when talking to someone nearby. This way, your batteries are conserved for a significantly longer period of time. These units are normally under \$100 apiece. Stop in at your local Radio Shack and ask about models #TSP21-1647 and #TSP21-1646.)

Having a portable AM/FM radio will be essential. Since even small towns now have radio stations, it seems likely that any stations located outside contaminated areas would be broadcasting news about attacks, telling listeners which places were hit (and thereby giving you clues as to where places of safety might be), and relaying government instructions about what to do during the emergency. Furthermore the government might take over working stations with FEMA (the Federal Emergency Management Agency) or other agencies giving instructions on how to minimize risk as well as what evacuation plans might be going into effect.

Receiving such broadcasts would be as simple as turning on a battery operated AM or even FM receiver

and listening in. As mentioned earlier, it would be very wise to include lots of spare batteries for your radio in your shelter room with you. An even better option, as mentioned previously in the section on "Creating a Sealed Room," would be to purchase a "wind up" (hand crank) radio that would work without batteries. (See "Sources" appendix.)

If you are using a radio that operates on batteries, then you should use it sparingly to conserve the batteries and prolong the period during which you can receive information with it. During emergencies, broadcasters tend to repeat important messages over and over in order to be sure everyone gets the information. If you keep your radio on, you'll only hear these repeated messages without gaining any new information after the first few minutes of listening. A better strategy is to listen in for short periods of time on the hour, finding a station that seems to have the most information pertaining to your area. Again, the key is to have a large number of batteries, and to use your radio sparingly. A dead radio will leave you blind to what is going on around you.

Even if our government were to be crippled beyond being able to set up emergency procedures (and this seems extremely doubtful), radio broadcasts from outside US borders might also be received via short-wave broadcasts. While these would be of limited use as far as assessing your local situation, they might give you some idea as to how widespread the disaster was, if there would be outside help coming, and so forth. Such information could be very beneficial in making plans. **For example, learning that a neighboring area was relatively unaffected while another was highly contaminated might keep you from heading the wrong way should you decide to evacuate your area.**

## When To Leave

If the radio brings you a message that people are being evacuated from your area, you need to be cautious about leaving. It seems likely that survivors might panic and leave in droves -- thereby creating gridlock that could leave everyone stranded in a dangerous area. Furthermore, such people might be carrying the disease they're attempting to escape; others might be dangerously desperate to get their families out, resorting to criminal acts if necessary to do so. Getting your family out into the middle of such a mob would be foolish.

Instead wait a while if at all possible, listening to your radio to try to determine if everyone is able to leave in an orderly fashion. Once it seems likely that you can make your escape, then you and your family members should carefully "suit up" in your protective clothing (as described in previous sections of this manual) and attempt to drive out. Automobiles are not air tight, even if you keep vents and air conditioning systems closed and turned off. That means that your suits and masks must be worn until you reach a safe area.

Generally you'll probably be better to sit tight in your shelter room until you're absolutely sure you can reach safety. Getting trapped in traffic or being herded into a refugee camp where some people are sick, and where a plague will spread quickly if it breaks out, is not a good tactic for survival.

Of course with some biological agents like anthrax, large areas might remain contaminated for long periods of time. But even so, you're going to be better off hunkering down in a shelter until the spores have time to settle out of the air and become trapped in the soil and water. At that point, traveling through contaminated areas would be much, much safer than it would for the first few days after an attack when spores are still airborne. In such a case, remaining in a shelter room you've constructed for a strategic amount of time could spell the difference between life and death when you finally decide to leave.