

# FIGHTING CHANCE

*John 8: 31-32*

*Proverbs 22: 3*

Newsletter Vol. III, No. 2

October 1990

## ALLENTOWN FAIR

The first major public appearance in Pennsylvania of the Pennsylvania mobile shelter civil defense display was at the Allentown Labor Day Fair. This fair has an attendance of over one-half million people.

The appearance was organized by **Fighting Chance** supporter Dr. Jane Orient. Working with her were several other **Fighting Chance** supporters and Steve Alley of the American Legion. Also participating was Col. Warren Everett of High Frontier who set up a strategic defense display with the mobile shelter display.

The High Frontier contribution included an actual "brilliant pebble" strategic defense device and viewings of the film, "One Incoming." Therefore visitors had an opportunity to see actual examples of both the strategic defense hardware and civil defense hardware that should be deployed now for their protection.

The Brilliant Pebble is about three feet long. In orbit, it is capable of intercepting and destroying an intercontinental ballistic missile. One such missile with MIRVed warheads could be launched in war or by terrorists and could destroy a dozen or more American cities. The combination of active defenses, like the pebble, and passive defenses, like the shelter, could preserve most American buildings, industries, and lives in even a major attack. The existence of deployed strategic and civil defenses in America would lower the benefits and raise the risks of war or terrorism to such an extent that our enemies might be deterred from even launching an attack.

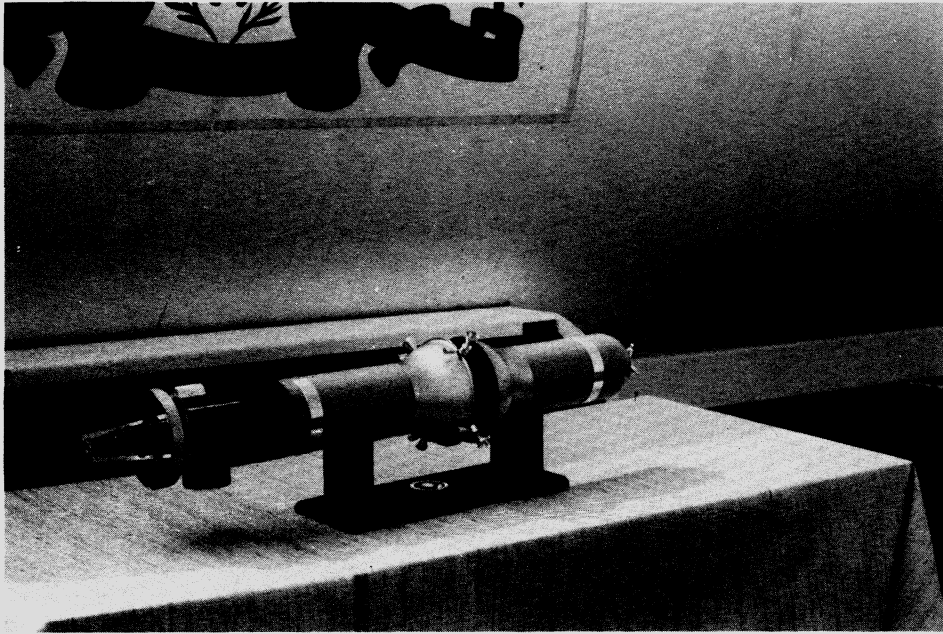
These mobile displays, which are 35 feet long, 12 feet high, weigh seven tons, and contain unique technology and habitability equipment, are an ideal mechanism to attract attention at a large public event. Once people are drawn to the display, there is an opportunity to deliver a broad homeland defense message including strategic as well as civil defense.



Jane Orient, Steve Alley, and Volunteers  
Setting Up the Exhibit



Jane Orient and Col. Warren Everett  
with Shelter and Brilliant Pebble



Brilliant Pebble

Also, at a fair appearance, the displays provide an opportunity to bring together potential members and volunteers for regional civil defense organizations. One fair appearance (which can be arranged and staffed by a few people) can easily identify a large potential membership for a local civil defense group.

Therefore the Allentown Fair provided an opportunity to educate many people about homeland defense and also to strengthen the support and membership of several homeland defense organizations. These included Physicians for Civil Defense and Doctors for Disaster Preparedness represented by Dr. Orient, the American Legion civil defense effort and the New England Civil Defense Association represented by Mr. Alley, High Frontier represented by Col. Everett, and **Fighting Chance** represented by these people and by volunteers from Pennsylvania.

There is sometimes a tendency for organizations working toward similar goals to compete with one another to the detriment of their mutual work. America has no credible homeland defense and she surely cannot afford counterproductive competition between those who are working toward correction of this intolerable situation.

The Allentown Fair provides an excellent example of a cooperative homeland defense effort. We are especially pleased with the melding of the civil defense message and the strategic defense message of High Frontier in this appearance before over one-half million grass-roots Americans. Those responsible for America's defenses (and lack of defenses) are definitely going to be feeling the effects of Allentown and subsequent similar events.

**Fighting Chance** is privileged to have had the opportunity to make this event possible.

## POTASSIUM IODIDE

Potassium iodide should be included in emergency supplies for use as a thyroid blocking agent. When properly used, it prevents the accumulation of radioactive iodine in the thyroid gland. Many Americans may not be able to avoid exposure to radioactive iodine during a nuclear crisis, although proper civil defense preparations would prevent that exposure for most people.

Potassium iodide administration must not be mistaken for an oral antidote to radiation. There have been numerous claims about diets and dietary supplements which allegedly protect humans from radiation. As advocated, these claims are usually false. While it is true that some diets optimize the ability of human tissues to repair radiation damage and to resist its secondary effects, the quantitative range of improvement is small when compared with the ranges of likely radiation exposure.

It would be tragic for people to be killed or seriously injured by radiation exposure which they falsely believed had been neutralized by a special diet.

Potassium iodide is an oral supplement that for very unique reasons happens to be protective against the long-term effects of low-level exposure to the radioisotopes of one particular element. Since those isotopes are very soluble in water and unusually long-lived, it is especially useful to have this supplement in the event of a nuclear disaster.

Detailed instructions are given in Nuclear War Survival Skills for the use of crystalline potassium iodide. Potassium iodide tablets are also available, but, as a result of bureaucratic regulations, they are very expensive.

We have previously written in this newsletter about potassium iodide and have recommended Van Waters and Rogers chemical supply company as a source. Unfortunately, Van Waters and Rogers prefers to sell only to other companies, and some people have had difficulty in ordering from them.

We now have a less expensive source which is willing to sell to the general public.

Nasco (best known for their 50 year old mail order farm supply business) also has a "Science" catalog. This catalog offers a very wide selection of teaching aids for grade school science including chemistry supplies. The chemistry supplies include reagent ACS grade potassium iodide. Current prices are \$10.50 for 100 grams (catalog number SA9682M) and \$35.50 for 500 grams (catalog number SA9683M). They also offer a practical grade, but the price is not enough lower to warrant the lower purity.

The NASCO telephone number is 1-800-558-9595. I suggest that you ask them to send both their "farm" and "science" catalogs.

NASCO is not selling this potassium iodide for human consumption nor are we suggesting that you buy it for human consumption. This potassium iodide is an emergency supply to be used *only* in a severe, life-threatening nuclear emergency. In such an

emergency, the ACS reagent grade potassium iodide could save many lives and would be entirely appropriate and very safe.

500 grams of potassium iodide provides 100 days of protection for 38 people. Under most circumstances, this protection would be required for less than 100 days.

Even though the United States Government acknowledges that potassium iodide would be of substantial benefit in a nuclear crisis, very little of this substance has been stockpiled. Personally purchased supplies obtained in advance would probably be your only source of potassium iodide in a nuclear emergency.

## EMERGENCY SUPPLIES

Even if the United States were to suffer an all-out nuclear surprise attack by the Soviet Union, a large number of unprotected Americans would survive the initial attack. Depending upon many uncertain factors, there might well be enough initial survivors to avoid occupation, rebuild the country, and live productive and worthwhile lives.

The post-attack survival of Americans would depend substantially upon available stockpiles of water, food, medicine, survival information, and other critical items. After carefully considering these requirements and conducting numerous studies, governmental authorities have concluded that water, food, medicine and similar items will not be stockpiled or protected.

The Federal Emergency Management Agency (FEMA) with resources of over \$300 million per year in civil defense and federal preparedness funds has decided that one critical post-attack need supersedes all others.

America *must* have an adequate post-attack supply of bureaucrats and politicians.

Therefore, a large part of FEMA's resources are utilized for "continuity of government" programs.

Small numbers of shelter spaces are being built. They are not being built on military bases for our troops, nor in cities for our key workers, nor in school yards for our kids, nor in neighborhoods for our wives, husbands, and families. They are being built solely to protect selected groups of bureaucrats and politicians who, after helping to make the unconscionable decisions that have kept our country without credible civil or strategic defenses, must be kept alive to give us further good advice.

Small amounts of water, food, and medicine are being stockpiled in safe places. These are not, however, for ordinary Americans. These supplies are to keep those same "decision makers" in good health, so that they can direct the activities of millions of starving, injured American survivors.

It can be convincingly argued that, if America is ever attacked, her greatest post-attack needs will be for military men and women to defend her, productive men and women to rebuild her, and children to give her hope for the future. These survivors would do their

best in an atmosphere of freedom - unfettered by the chains of bureaucracy and politics which are so debilitating to their efforts today.

In this regard it might even be argued that the survivors would be better off without "planners", bureaucrats, and politicians, although that argument would be uncharitable. Even bureaucrats and politicians deserve a "fighting chance."

Nevertheless, with their outrageous programs to spend most of America's small homeland defense budget for the physical protection of themselves and their positions as "planners", these people have made clear just how very well a post-attack America could do without them.

If FEMA's \$300 million per year were spent primarily for the immediate protection of ordinary Americans, only about one million Americans could be adequately protected each year. If, however, this were done, there would be an immediate and irresistible demand from the remaining Americans for protection. FEMA's budget would increase dramatically, and the entire civil defense system could be built within a few years. (It could be built in one year or less if the right people were given proper resources.)

That nation-wide civil defense system would quite correctly include special facilities to ensure "continuity of government." In fact, even if it housed no current officials, it would automatically provide for this need.

America is a country governed "of the people, by the people, and for the people." If the people survive, America survives. If the people do not survive, America perishes. Every American is a part of the "continuity of American government" and many Americans are personally able to fill governmental positions with as great or greater skill than the current crowd of paper-shufflers.

Within FEMA there are a few men and women who understand all of this and who would like very much to discard the current charade and start to provide a credible and honorable civil defense for the American people. Within Congress there are a few such people, too.

Within the Washington establishment, however, and especially within the Department of Defense, there are powerful interests who want to advance their own careers and programs with the money that should be providing a strategic and civil defense for America. They know that if a civil defense "funding leak" ever begins - if grass-roots America ever starts to receive even partial protection - they will not be able to stem the flow.

This is the reason that America has no credible civil defense at all. Like pregnancy, it is politically impossible for a free people to be only a "little-bit" defended.

In addition to the fears that \$75 billion might disappear into American civil defense and a similar amount into strategic defense, Pentagon moguls (and their industrial counterparts) have an even greater fear. People who are protected are less susceptible to manipulation by fear. A first-rate homeland defense would permanently lower the amount that Americans would be willing to spend for offensive military technology. The moguls would not only lose the initial cost, but they would also lose ongoing resources.

It is a tragic irony that in their opposition to civil and strategic defense the unilateral disarmament "peace" groups find themselves allied with the defense establishment. Both of these groups need fear to promote their programs. The problem is not, as they both claim, that homeland defense would not work. The problem is that it would work too well.

One group tells Americans that they would be better off "Red" than "Dead". The other group tells Americans that unless they provide vast sums of money they will be "Dead" and their children will be "Red".

Both groups have one secret fear of their own.

That fear is that Americans, protected behind a modern shield of civil and strategic defenses, will realize that they are not likely to be either "Red" or "Dead". They are instead likely to become, like the Swiss, a people free from fear who have avoided all wars for many generations.

### PHYSICIANS FOR CIVIL DEFENSE

Dr. Jane Orient in Tucson, Arizona has recently organized a new civil defense organization, Physicians for Civil Defense (PCD). This group will fill the need for a physicians organization devoted entirely to the goal of American civil defense.

We have often mentioned in this newsletter the organization which calls itself "Physicians for Social Responsibility" (PSR). That organization has now spawned off-shoots such as "Educators for Social Responsibility"(ESR) and "Computer Programmers for Social Responsibility" (CPSR). PSR and ESR have worked effectively with the National Education Association to insert anti-defense and pro-Soviet propaganda into American public school curricula.

Dr. Orient, some other **Fighting Chance** supporters, and I are members of Doctors for Disaster Preparedness (DDP), which has opposed PSR and which includes civil defense in its general disaster preparedness message. We have lectured and debated on behalf of DDP and will continue to do so.

Physicians for Civil Defense is urgently needed to focus the combined influence of America's medical doctors on the need for the immediate deployment of civil defense hardware and training. It should become a very effective voice for civil defense under Dr. Orient's leadership. It may even stimulate the development of its own set of companions such as Educators for Civil Defense and Scientists for Civil Defense. PCD will also admit non-physician members.

Dr. Orient is a very articulate and effective spokeswoman for civil defense. She spends a great amount of her own time and money working for civil defense throughout the United States. Physicians for Civil Defense is organized as a non-profit, volunteer effort. I strongly recommend that you send PCD a donation and become a supporter of its work.

Write to Physicians for Civil Defense, 1601 N. Tucson Blvd. Suite 9, Tucson, Arizona 85716 or telephone Jane M. Orient, MD at (602) 325-2689.

## MORE MOBILE SHELTER DISPLAYS

We have set a goal of one mobile civil defense display circulating in each of the 50 states. (At present there are four such displays.) This would assure that most Americans would see proper civil defense technology on display in their communities. Judging by the enthusiastic response to these exhibits, one in each state might well stimulate sufficient grass-roots demand to result in a civil defense system for the American people.

There is no doubt that these displays are the most effective civil defense program that we have initiated and possibly the only one with a realistic potential to stimulate national action. Unfortunately, the cost of supplying a shelter to every state is about one million dollars. We have no present prospect of obtaining this amount of money.

Therefore, we plan to accumulate resources for these displays gradually, one-by-one. This slow effort may prove to be too little and too late, but we shall do our very best.

During the past few months, as a result of donations sent in response to our newsletter appeal for mobile display support, we have accumulated the funds for one more display. We have also been paying costs associated with the fair tours of the Pennsylvania display in the Northeast. In addition, we have worked to stimulate the Federal Emergency Management Agency (FEMA) to implement their earlier promises of matching funds.

FEMA has now agreed to provide 75% of the funds required to build more mobile displays for the states. Each state must provide 25% of the cost.

While a display owned by a state has the disadvantage that civil defense groups must contend with state bureaucracy in borrowing it for use, experience so far indicates that this is not a major difficulty. Certainly four displays in four states are superior to the one display which we now have the funds to build.

Therefore, we have offered to supply the 25% matching funds to build four more displays during the next few months. Arizona and Missouri are the first states which have completed the FEMA application to receive these displays.

It is obviously wrong that a small, volunteer, non-profit effort must give money to the government in order to get it to do its job.

It is also wrong, however, that the United States government has entirely failed in its responsibility to provide for the homeland defense of the American people. Our job is to do our best to correct that error by whatever means we find available.

but this has several disadvantages which make it less satisfactory and inherently more expensive.

You can rent a bottle for compressed gas and a pressure regulator from most welding supply stores along with your purchase of the contents of the bottle. A large bottle is about four feet high and holds about 150 cubic feet of gas. Fit the outlet with a flexible plastic tube long enough to reach easily to the bottom of the buckets. With the gas running, food is poured into the bucket and the lid closed except for a gap for the tube. After the gas has purged the grain, the tube is withdrawn and the bucket quickly sealed.

Carbon dioxide is heavier than air, so it fills the bucket like an invisible liquid and purges it more efficiently than nitrogen, which is slightly lighter than air. Moreover, carbon dioxide will spill over the edge in an invisible stream when the bucket is full. This will extinguish a candle or match held near the edge, serving as an indicator that the bucket has been purged.

For both gases you should experiment with settings on the regulator by using a balloon or other volumetric device to determine the setting that will deliver one bucket full of gas in a reasonable time like 15 seconds. With nitrogen, you should flush with about three buckets of gas. For carbon dioxide, half that much should suffice.

Carbon dioxide, whether it is supplied by dry ice (a chunk is thrown in the bottom of the bucket) or a compressed cylinder, has a special idiosyncrasy that is not widely known. It is absorbed by the plastic and grain. Therefore, if you flush a square plastic bucket of grain with carbon dioxide and then seal the lid in a gas-tight manner, within a short time the walls, top, and bottom of the container will be pressed against the grain. The bucket will seem like a solid block of plastic with no grain shaking around inside.

The carbon dioxide has disappeared, leaving your grain *vacuum packed*. This is ideal providing that your lid was absolutely tight. However, if the lid had even the slightest leak, your grain will shake around normally with no sign of a vacuum. The departing carbon dioxide will have been replaced by outside air - thereby rendering useless most of the effort you have made to purge your grain.

Because of this characteristic of carbon dioxide, you should use nitrogen, unless you are sure that your lids are absolutely sealed. It takes a long time for air to exchange across a tiny leak if there is no pressure difference to drive it. By the time air replaces the nitrogen, your bugs will be dead.

If the buckets are not very tight, there is a greater need to keep them in a dry non-humid area with stable temperature. As outside temperature changes, air can be pushed in and out of the containers by contraction and expansion of the air around the grain. If the air is moist, this gradually adds water to the grain which may cause damage. It is also wise to fill the containers as full as possible to minimize this effect.

Buckets are sold with rubber o-rings, but new buckets of this type are expensive. In large quantities, they are a little cheaper if purchased directly from the manufacturer. If you see a bucket you like, look for the manufacturer's name and address embossed in the plastic on its bottom. We prefer square buckets to round ones, because they stack more efficiently.

There is presently a source of very inexpensive buckets in Medford, Oregon. The Jackson County Civil Defense Council, a non-profit group that was started by a mailing of the book Fighting Chance to the residents of Medford, has an arrangement with a large food distributor. The distributor donates thousands of clean, once-used square plastic buckets (without o-rings) to the Council. The Council sells them for 50 cents each to support their civil defense work. In large numbers, prices of less than 50 cents might be arranged.

The Jackson County Civil Defense Council can be contacted by calling Andy Dudley at (503) 779-6398 or Tom Klinefelter at (503) 776-2032. This is an exceptional bargain.

With buckets this inexpensive, an airtight seal is best obtained by putting a bead of silicone rubber sealant (obtained in extrudeable form in tubes from almost any hardware store) under the sealing groove, before closing the bucket. The bucket must be cut open and discarded when the food is needed, but the seal is perfect. This method with a carbon dioxide flush is excellent for storing grain and beans. Nitrogen-flushed storage in new buckets with rubber o-rings is comparable, but the bucket might cost almost as much as the grain.

For small storage programs and especially with a diversity of grains and beans, there is a new method available wherein the grain is sealed in small vacuum-packed metalized bags. These bags have the advantage of storing small increments per container and being packed easily in rectangular cardboard boxes or unusually shaped spaces such under the floor of a cylindrical shelter.

Available from Preparedness Products (telephone (801) 261-8823) and perhaps some other outlets, food packaged this way is a little less expensive than in new plastic buckets. The only disadvantage seems to be the greater vulnerability of the bags to rodents. Small stores of food, however, are often kept in areas of the home where rodents are unlikely.

Canned storage of dried grain and beans is excellent, too. Some companies such as Nitro-Pak (telephone (213) 929-4705) offer nitrogen-packed canned grains and beans. These products are, however, often expensive. You should carefully compare prices with other alternatives and inform the dealers as to your comparisons. If you are purchasing a large amount, perhaps a dealer in nitrogen-packed canned grain will want to meet the price of a competing product. Cans are excellent. The only precaution is to keep them in a relatively dry place. If moisture is excessive, the cans will rust over a period of many years, although it would be unusual for them to rust completely through and fail to protect the grain.

Storage of very large amounts of grain can be carried out in underground steel tanks. We advocate storage of this type as part of a national civil defense program. The tanks should be fitted with a flushing system with inlet and outlet valves so that they can be thoroughly flushed with nitrogen or carbon dioxide. Also, provision should be made to sample the food occasionally with measurement of its moisture content. (Meters for moisture measurement in grain are available from NASCO (telephone (800) 558-9595) for between \$130 and \$275.)

If the grain is kept sealed and dry, it will last indefinitely. We prefer several small tanks to one large one just for the added peace of mind that no one error can destroy the whole reserve.

It is very sensible to arrange your own packaging of bulk purchased food, because the savings in costs could easily purchase 50% or even 100% more food. You must, however, make prior preparations to store it as soon as it arrives, or your saving could quickly turn into a loss. You must not purchase grain in paper sacks and then pile the sacks aside thinking that you can get away with no moisture or pest control.

If you leave newly purchased food grain and beans in paper sacks for even a few weeks after delivery, you are likely to find yourself racing against a population of newly discovered mice or insects to protect grain that has also accumulated moisture which may markedly shorten its storage life.

During the Vietnam War one scientist pointed out that starvation in India could be completely eliminated if the empty military oil drums in Vietnam were shipped to India with instructions to clean them out and store grain in them. At that time *half* of the food grain in India was being eaten by pests or rotting (being eaten by miniature pests), because it was not protected from moisture, insects, and rodents.

### MOBILE SHELTER VIDEO TAPE

The Mobile Shelter video tape is completed.

It provides a detailed look at the mobile shelter that has been on display at the National Emergency Training Center during 1989 and 1990. This tape is a companion to the videotaped tour of the first steel shelter installed here when the **Fighting Chance** project was initiated.

These tapes are \$29.50 each. Until December 31, 1990, both tapes will be available to recipients of this newsletter for a combined price of \$39.50.

If you previously purchased the installed shelter tour tape, you may purchase the new mobile shelter tape for \$10.00.

### MINIATURE SHELTER

Although many civil defense shelters have been built, most people have not made the substantial commitments of money and time required to provide proper civil defense shelters for their families. Those who have the book Nuclear War Survival Skills could construct some expedient protection.

Expedient shelters are, however, perishable. They are constructed of materials, including wood, which would be generally available in an emergency. Most shelters of this type become unsafe for occupancy within a few months after construction. Also, expedient shelters require significant time for construction and therefore might not be available in a very rapidly developing crisis.

In addition to our standardized designs, there are numerous "do-it-yourself" solutions that can provide protection on a permanent basis, but most people are deterred from undertaking such projects which may require substantial skill.

We have been experimenting with a protective shelter that would provide worthwhile protection on a permanent basis at low cost and with a minimum in comfort and habitability.

This shelter was constructed by a local steel fabricator entirely of new materials and coated with asphalt for burial for a price of \$900. This included about \$300 for materials (primarily steel) and about \$600 for labor (primarily welding) and shop expenses and profit.

It can be buried in a small space by an average family with shovels during their spare time. This would require about the same amount of digging as does a comparable expedient shelter. If your family does not want to dig the hole, a small backhoe can do the job in less than an hour. The shelter weighs about 1000 pounds, so a vehicle might be needed to drag it into place, although several people can roll and slide it without difficulty.

This shelter would afford fairly good nuclear protection for a cost of about \$150 per person. The shelter stay would be very unpleasant, but the occupants would probably survive. It is not at all comparable to a proper civil defense shelter, but it could save the lives of many Americans in a nuclear emergency.

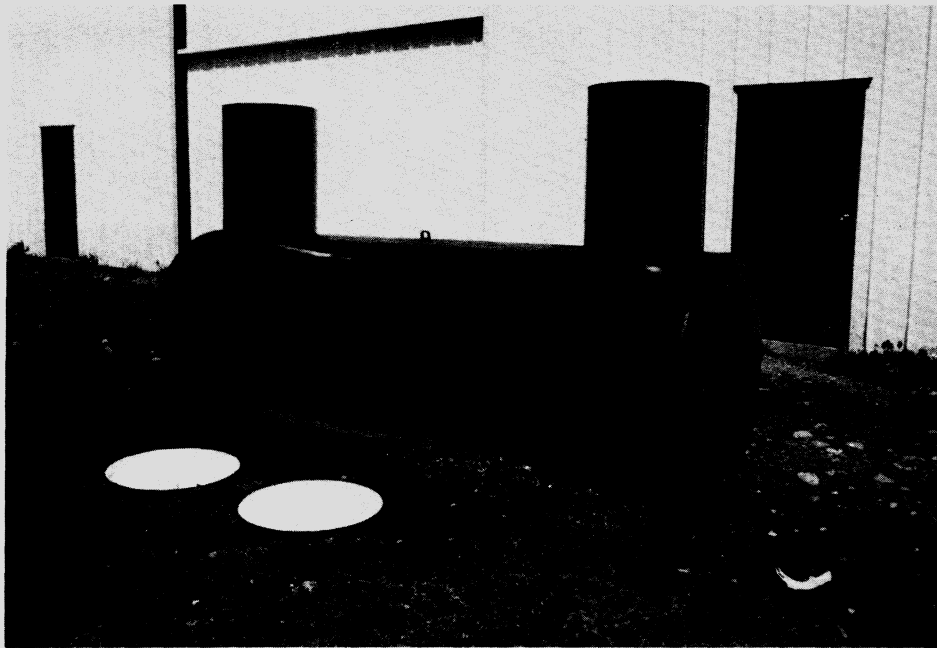
It does not have air filters for removal of chemical or biological agents. If a shelter of this type is equipped with the smallest Swiss shelter ventilation system which includes blast valves, blower, dust filter, and chemical and biological air filters, then the cost rises to about \$400 per person. This would keep the cost per person at a low level for groups of 10 to 15 occupants by placing them in a very small, uncomfortable shelter room. It is preferable to build a proper shelter for larger numbers of people if this amount of money per person is available.

The shelter room is a cylinder 46 inches in diameter and 12 feet long, which is fabricated from two 6 by 12-foot sheets of 10-gauge cold-rolled steel. The ends of the cylinder are closed by flat plates of the same steel. Six inches from each end, cylinders 24 inches in diameter and 3 feet long are attached at ninety degree angles to the shelter room to form two entryways and ventilation ducts. All seams are welded completely, and the assembled structure is sprayed with an asphalt coating. An attachment bracket is provided on one outer end for a protective anode for further corrosion protection.

The family should paint the inside of their shelter with primer and then gloss white paint. This requires about one-half gallon per coat. Arrange a household fan to suck air out of one entryway and then paint while backing away from that end. In this way I painted our test shelter without danger from paint fumes.

A similar structure could be built from corrugated and galvanized pipe, but it would be much more expensive to fabricate in a water-tight configuration unless mass-produced with proper tooling. In the case of large scale manufacture, corrugated and galvanized construction would be preferable.

The shelter doors consist of two circular 1/4-inch steel plates 25 1/2 inches in diameter. Each plate has a rolled rim made from a 1/4 inch thick steel strip 2 inches wide and 80 inches long. This rim must be welded to the plate inside and out. These caps, when properly installed and used, provide simple blast doors and valves suitable for blast overpressures up to 50 psi.



Miniature Shelter  
(With Normal Building Door  
in Background for Comparison)

Two small steel loops are welded to the inner surface of each door 6 inches in from the rim to serve as hinge supports. Four similar loops are welded at 90 degree positions and two inches down inside each of the 25 1/2-inch entryways. These are positioned at 45 degree angles to the longitudinal axis of the shelter room. The four loops permit water bottles to be raised into the entryways for additional radiation protection.

The shelter is buried with three feet of earth over the top of the shelter room and the 25 1/2 inch entryways extending two inches above the ground surface to avoid rain run-off into the shelter. Then a 6-inch by 6-inch concrete collar is poured in a trough in the earth around the entryway such that the rim of the door rests on the concrete and the door is

about 1/2 inch above the entryway rim when closed. This collar transfers blast load from the door to the soil and helps prevent crushing of the entryway pipe. The shelter should be located as far as is convenient away from burnable structures and on the side toward any expected nuclear targets so that the buildings will fall away from the shelter.

Finally, a protective ring of concrete or logs (such as railroad ties) is positioned around and above the closed door such that the door is recessed by about 6 inches. A berm of earth is placed around this ring. The "blast protector logs" described in Nuclear War Survival Skills are suitable for this, or the family may wish to make this structure with concrete. If concrete is used, a suitable drainage hole must be provided to prevent accumulation of rainwater in the ring with consequent leakage into the shelter.

Close to each end of the bottom of the shelter room, a 1 inch threaded hole is provided with threaded plugs which may be removed from inside. During burial, a few inches of gravel is placed in a recess under and around these holes. They permit drainage if water should leak into or be spilled in the shelter. A narrow floorboard may be placed loosely on the shelter bottom in order to keep the occupants dry if moisture is draining down the bottom.

Theoretically, this shelter has a fallout protection factor of about 10,000, an initial nuclear radiation protection factor of about 1,000, and a blast protection capability of about 50 psi. These are sufficient for most American locations even in a large-scale nuclear war. In use, given the uncertainties inherent in these severe conditions, it might degrade to a fallout protection factor of 1000 and blast protection of 25 psi which is still quite good. This shelter offers its occupants a good chance of survival of airburst explosions of most currently deployed nuclear weapons from a horizontal distance of one to two miles, and it offers good protection from radioactive fallout.

Unlike those in a proper shelter, in case of a near airburst approximately directly overhead the occupants of this shelter would be killed by initial nuclear radiation. If the explosion were off toward the horizon, then the initial nuclear radiation protection factor would be operable.

In use, the shelter must be equipped with 15 one-gallon containers filled with water for each shelter occupant. A few of these should have handles, because, after the shelter is occupied, they are to be drawn up into the entryways with cords placed through the four steel loops. The entryways are thereby partially filled with water for additional radiation protection.

Expedient ventilation equipment as described in Nuclear War Survival Skills must be provided. This can be a small Kearny air pump mounted in the rectangular opening of a cylindrical wooden frame built into the room, or simple expedient fans. The doors are propped open about 6 inches during shelter occupancy to allow expedient ventilation.

If the direction of an anticipated blast threat is known, then the doors are opened away from this threat. They may be propped open with small sticks. These sticks would be crushed and the doors slammed shut by a blast wave. The door is attached to the entryways by at least one chain connected to its inner loops to serve as a hinge. If the blast wave approaches from the open side, it might tear the door off. The blast protector ridge shields the door assembly from flying objects.

An alternate procedure is to prop the doors open with long sticks that extend to the bottom of the shelter. A shelter occupant is assigned to each stick. When the reflected light from outside indicates that a nuclear explosion has taken place, the occupant moves the stick and allows the door to fall shut. The door is then reopened when the blast wave has passed. The negative pressure wave may already have opened it, but this wave is not life-threatening. With rings welded to the bottom of the shelter under the doors, one might even arrange to bind the doors down with a load binder and chain before the blast wave arrives.

The shelter equipment must include heavy plastic sheeting and the other supplies and tools required to build tents over the doors as is described for expedient shelters in Nuclear War Survival Skills. These reduce the amount of fallout which may drift into the entryways. Spare supplies should be stocked to replace the tents if they are carried away by blast winds or other causes.

Plastic bags for waste disposal (you throw them out the doors after use), a homemade Kearny fallout meter, several flashlights with spare batteries (you will be able to see during the daytime by reflected outside light), and a copy of Nuclear War Survival Skills complete the shelter equipment. Store the radiation meter in a sealed bottle with drying agent as described in Nuclear War Survival Skills.

If this design does not appeal to your desire for a "high-tech" life-saving device, remember that a few days inside this pipe with your family and only water to drink (no food is recommended) is going to be very low-tech indeed. However, even if the quality of life is very low for a few days, you will probably survive the very horrible fate that awaits the unprotected victims of nuclear explosions.

There are many impediments to the installation of a proper family civil defense shelter - cost, motivation, distractions, fear, etc. We all have many things to do in life besides preparing fancy holes underground. Nevertheless, should the worst actually happen, you do not want to have the experience of realizing that your inaction has just condemned your family to a horrible and unnecessary death.

This shelter provides minimum nuclear survival requirements with high (but survivable) discomfort for an exceptionally low price in money and time. It is designed to lower the threshold of inaction for those knowledgeable people who have not yet obtained nuclear age insurance for themselves and those for whom they are responsible. If you subsequently acquire a proper shelter, this small unit will make an excellent storage place and also a backup shelter for other people whom you may decide to help.

There are thousands of metal fabricators throughout the United States who can manufacture this shelter for less than \$1000. It is, therefore, not necessary to pay shipping costs from a distant location. If you want one of these shelters, we suggest that you have it fabricated nearby.

This shelter was made by Oak Street Tank and Steel in Ashland, Oregon. Their telephone number is (503) 482-1536. Remember, however, the essence of this device is low cost and simplicity. If you add freight costs and also start making improvements in shelter habitability, your expenses may become a significant fraction of those required for a proper shelter, which would be much more protective and a far more desirable alternative to this design.