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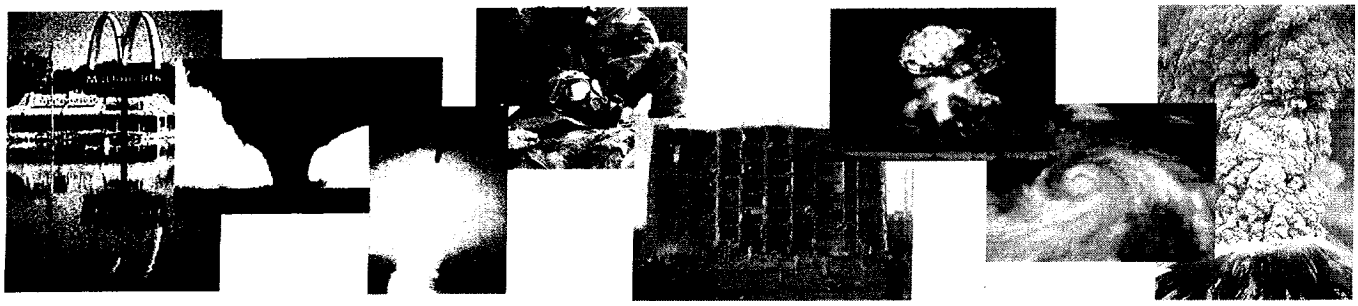
## Inside





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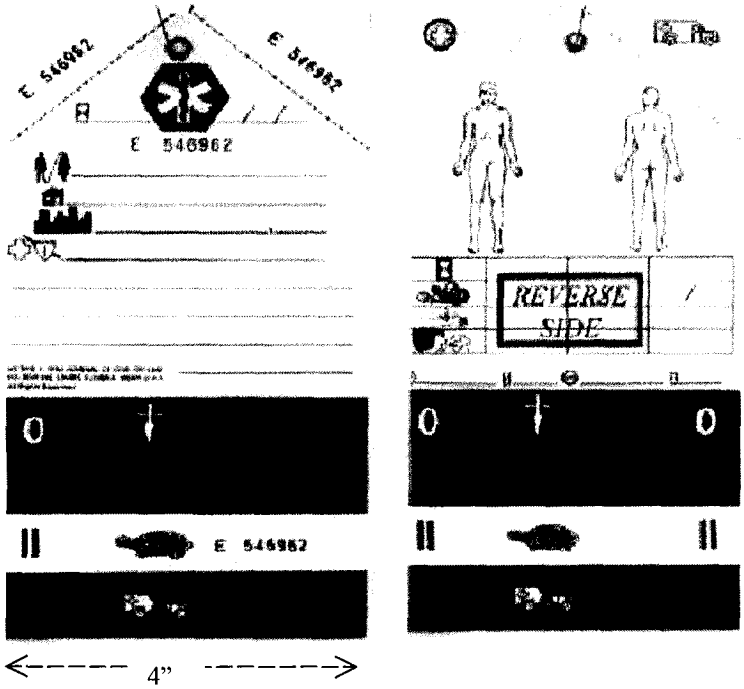


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# To our readers ...

This special double issue of the *Journal of Civil Defense* leads off with an article addressing the Y2K Challenge. This is the first in a series of Y2K articles that will be aimed at providing practical advice on why and how to prepare. If you aren't concerned about Y2K, please read this article, especially the Myths and the BIG PICTURE paragraphs.

Please note that the *Journal of Civil Defense* is now planned to be published every other month rather than quarterly. Due to the increased number of *Journals* per year, the *TACDA Alert* will now only be published if there is a major issue that arises that cannot wait until the next *Journal* or when a time-urgent offer is available.

We are always looking for feedback and for any articles that alert the public to important civil defense issues and that can help those desiring to be better prepared.

***Thanks for your support!***

**Kevin Briggs**
**President, TACDA**

The *Journal of Civil Defense* is the official bimonthly publication of the American Civil Defense Association (TACDA), P.O Box 1057, Starke, Fla. 32091. Kevin Briggs, President; Kathy Eiland, Executive Director. In addition to the above, the TACDA Board consists of Ed York, Sharon Packer, Frank L. Williams, Bron Cikotas, Nancy D. Greene, and Regina Bass. Walter Murphey is the Editor Emeritus of the Journal.

# The Year 2000 (Y2K) Challenge (Part 1)

## Myths, Realities, and Reasonable Responses

by Kevin Briggs, President, The American Civil Defense Association

### Index to *The Y2K Challenge*



***Note: Sections 4.c – 4.n will be provided in later Journals.***

## 1. *Introduction*

1.a **Purpose**. The purpose of this report is threefold. First, I want to alert people that the Y2K problem could create major disruptions to society both during 1999 and 2000 and should not be casually

dismissed. It astonishes me that so many people confidently shrug it off as "nothing to worry about" yet have little or no understanding of the problem. Second, I feel there is a need to provide detailed practical information to assist individuals and groups to make reasonable preparations. Third, I hope the Y2K Challenge will be a catalyst for developing sane and responsible lifestyles that are better prepared to meet family and community needs, whatever the future crises may be.

1.b Why another paper on Y2K? While I have read many excellent books and articles on the subject that explain why it may be a problem and how it may impact you, I've found few that adequately cover the broad spectrum of how to prepare. This paper's purpose is to provide practical information for individuals and groups to make reasonable and cost-effective preparations for Y2K and other potential disasters.

1.c **The Bigger Picture**. The Y2K problem is just one of many potentially catastrophic disasters that our modern society faces. One of the consequences of the technology revolutions we've experienced is that modern societies face new threats and in many respects greater vulnerabilities than did previous generations. Because the U.S. has not experienced many nationwide disasters since World War II, we've built our society around the assumption that society is generally stable and will continue that way. However, a longer view of history shows that major disruptions are likely to occur. Unfortunately, we are now building a super-efficient society that minimizes any reserve stocks of goods, centralizes much of production, and that rests on a multi-legged infrastructure that can collapse if one leg is disrupted. Most people have generally drifted away from the more challenging self-reliant and prepared lifestyle that was more typical of previous generations. Instead, people in the USA today assume that society will remain stable and tend to increasingly rely on the government and private industry to meet their essential needs. Unfortunately, this assumption of stability and the growing dependency on government and industry will probably lead to a needless loss of life in times of crisis – and quite possibly, a future loss of liberty.

We live in a very fragile society that will, at some point, be shattered if we do not start to change our level of preparedness. The good news is that we can easily and quickly change many of our major vulnerabilities into relative strengths if we choose to. The bad news is that people do not seem to be aware of the threats and so do not spend much time or effort to make reasonable preparations.

One benefit of the Y2K problem is that it is causing many people to prepare for more than just a Y2K disaster (whether they realize it or not). Since the Y2K problem has a generally expected time of occurrence, many people are taking general preparedness actions today that may save their lives in future disasters they had not anticipated.

Many people put off making preparations until it is too late since they believe nothing will happen in the "near" future. This may happen with the Y2K problem, especially if people find that severe problems actually start in 1999 (as well they may). My advice to you is to begin **now** to prepare for infrastructure breakdowns that may occur at any time. Don't be among those who later are grieving over their slow response to reasonable warnings or are panicked because they waited too long.

Perhaps it will be helpful to list some other areas, beyond Y2K, that could dramatically disrupt our infrastructures of water, food, electricity, communications, finances, and medicine. All of these are technically feasible today, and could happen with little warning.

1. **Cyber Attack**. A cyber attack could take out critical portions of our computer, communications, financial, and utility infrastructures. One such attack (though conducted by friendly forces simulating enemy cyber warriors) was conducted by the Department of

Defense (DOD) called *Eligible Receiver*. According to reports from Deputy Secretary of Defense John J. Hamre [1], this exercise showed that a hostile nation with relatively little resources could have taken down portions of our nation's power grid and potentially other infrastructure elements. *Eligible Receiver* used roughly 35 computer specialists with standard PCs and commercially available software and 3 months of preparation to perform the attack. Future cyber attacks could be done remotely and with hidden/subtle intrusions into the computer networks that support our society. A potential time for an attack could be January 2000. Our computer experts are likely to be very busy with Y2K problems and less able to respond to cyber attacks, especially if there is confusion over what is an external attack and what is a normal Y2K problem.

2. **Biological Attack**. A biological warfare attack against a building, city, or region. Biological attacks could be accomplished by many nations that are hostile to the United States. These attacks could be hard to trace to the perpetrator and could kill millions of people. These weapons have been called the poor man's atom bomb because of the low cost and ease of production coupled with the possibility of thousands or millions of deaths. If an attack used highly infectious agents like smallpox, roughly ¼ or more of the U.S. population could be killed. If the attack used Anthrax, while not very infectious, it could kill thousands or millions of people within one week.
3. **EMP**. A high altitude (above the ionosphere) burst of a nuclear weapon can create a powerful and widespread Electromagnetic Pulse (EMP) at the surface of the earth. An EMP attack, while not killing people with blast, heat, or direct radiation effects could kill thousands indirectly through major power and electronics disruptions/interruptions. The EMP effects could destroy key electronics throughout our society that could take months to years to replace. One burst placed strategically above the continental US (CONUS) could impact the entire CONUS with damage or disruption and may be hard to clearly trace to a perpetrating country. [2]
4. **Volcanic Eruption**. A major volcanic eruption could occur in areas like Hawaii, the Cascades, Yellowstone, or Mammoth, etc. and spread lethal ash over several states, as occurred in the distant past. A major eruption could make the Mount St Helens incident look relatively small by comparison. [3]
5. **Massive Earthquake**. A major earthquake could occur over a multi-state region due to the New Madrid fault. If an earthquake like the ones that occurred in the 1811 – 12 timeframe happened today, thousands of people would potentially die and it could take months or years for our infrastructure to re-stabilize. For those who are not aware, the New Madrid earthquakes exceeded 8.0 on the Richter scale and rerouted the Mississippi River. Many scientists believe there is high probability that a large New Madrid earthquake will occur again within the next 10 years[4].
6. **Tidal Wave**. A major earthquake or a previously undetected/unanticipated asteroid/comet could strike the ocean and cause a tidal wave that could kill hundreds to millions.
7. **Nuclear Explosions**. Nuclear weapon explosions whether from terrorists or a hostile nation's attack or due to accidental launches could kill thousands to millions of people and disrupt society for years.

1.d **Request for Help**. This paper is a work in progress and will hopefully be updated with feedback from various readers. Please send any comments you have to kbriggs@tacda.org or by mail to The American Civil Defense Association (TACDA) at P.O. Box 910, Starke, Florida 32091. Please

[1] Speech to Fortune 500 CIOs, July 21, 1998, www.defenselink.mil/news/Aug1998/t08121998_t072198.html.
[2] See http://jya.com/emp.htm for more information.
[3] See http://www.usgs.gov/themes/volcano.html for more information.
[4] See http://www.hsv.com/genlintr/newmadrd for more information.

understand that my staff or I may not be able to respond to all your correspondence in as rapid a fashion as you would like. Please be patient, we will try to address as many of your concerns as possible through future releases of this paper or by other information presented in our Journal or web site at www.tacda.org.

1.e **Disclaimer**. This publication represents the author's opinions on practical ways to prepare for the Y2K problem and other potential disasters. It does not necessarily represent the views of the leadership or members of the American Civil Defense Association (TACDA). The author is not engaged in rendering professional legal, medical, financial, etc. advice. The reader should seek the services of a professional accountant, lawyer, doctor, engineer, or financial planner where needed. While I have endeavored to assure the accuracy of the statistics and information that are used in this report, there may be inaccuracies. Please email me if you find some. The author and TACDA cannot be held responsible for any loss incurred resulting from the application of any of the information in this report.



## *2. Y2K Myths*

### 2.a Myth #1. "The Y2K problem is nothing to worry about"

How big of a problem will the Year 2000 (Y2K for short) computer problem be? No one can say with certainty. Many experts say that it will most likely be similar to a bad winter storm striking simultaneously across portions of the country. However, many experts also say that though less likely, the Y2K problem has the potential to be a worldwide catastrophe for months or years. People who say with certainty that they know there will be no major problems related to Y2K are either "confidently hopeful" or have hidden agendas and are misstating the unknown as if it were fact. What is certain is that the Y2K issue is not just a problem rooted in computer technology. The problem has deeper roots in peoples' fears and the fragility of our national infrastructure. For example, if people fear that they will not be able to get their savings out of a bank on January 1st 2000 due to computer problems (whether real or not), they may wonder whether to withdraw their money from the bank months in advance. But if there is then an actual problem with a bank (or even a strong rumor of a problem), people may panic and withdraw all their money as quickly as they can. If this panic spreads, many banks may be temporarily or permanently closed because the banks only have a small portion of their total assets in cash should cash be demanded by frightened people. The government does not have the resources to readily cover a widespread run on bank finances (although institutions like the FDIC can help with smaller problems and the Federal Reserve Corporation is reportedly working to have up to $200 billion in cash reserves to handle a strong - moderate "run" on the banks [5]). Many people in this country well remember stories from the depression era, when people lost their life earnings if they moved too slowly to withdraw their savings (as happened to one of my father's brothers). One of the favorite movies of all time, "It's a Wonderful Life", emphasizes how fragile a banking institution can be without trust and how the bank management can fear a "run" on its assets. Well known examples like these might help fuel a future

[5] See http://www.garynorth.com/y2k/detail_.cfm/2367 for more information.

"bank run" and show how a "potential" technological problem may actually cause us to stumble into a real infrastructure weakness.[6]

### 2.b Myth #2. "The U.S. government will fix any major Y2K problem.

First off – **think hard**. Do you really trust the government to adequately solve the problems you face and to fully warn you of any potential problems? The Y2K expert, Jim Lord, recently recounted the following sobering historical vignette on how the government can downplay a serious problem:

> *"Michael Harden, President and CEO of Century Technology Services, Inc. and author of two Y2K books, compared Y2K to the great Yellow Fever epidemic that struck the Mississippi Valley in 1878. The deadly disease, carried by mosquitoes, broke out on the Gulf Coast and slowly worked its way up the river to Memphis, Tennessee. The people in that city knew in advance that the epidemic was on its way. They knew approximately when it would arrive. They knew it would kill them. The government and the media said, "Don't panic. Everything will be all right." Relieved by these assurances, most stayed in the city. (The government would never let something like that happen. Besides, Bill Gates' grandfather will get it fixed.) Fifty-five percent of the population died. Many Catholic nuns chose to remain to give aid and comfort to those afflicted with the disease. Most of them perished and today they are known as the "Martyrs of Memphis." The city was disestablished as a political entity and was not re-chartered for fourteen years."*[7]

Second, the government has neither the understanding nor authority or capability to resolve widespread Y2K problems that may affect you dramatically. I say this for three reasons. First, the Y2K problem is too complex. No one, like our government, can identify and track all the problems with the billions of imbedded chips and software programs and linked human processes that control societal infrastructures worldwide. Second, the government only has very limited authority to monitor and fix problems. The U.S. government can direct its own agencies and departments to fix the problems that can be identified, but the government has no authority to closely monitor and direct the activities of the state, local, and private sectors both here and worldwide (unless perhaps, it declares martial law or enacts existing executive orders). Third, if a major portion of the U.S. infrastructure fails due to a lack of Y2K preparedness in the private or international sectors, the government does not necessarily have the resources to rapidly fix the problem. Indeed the government working in coordination with other private and international entities may require months or years to solve the problem. For example, most nations that the U.S. business interests have linked arms with are far behind in their Y2K preparations.[8] Just as a good swimmer can drown when trying to save one or more poor swimmers in deep water, the U.S. has many "poorly prepared" swimmers that we are tied to. We may not be able to keep both several others and ourselves afloat. For example, if European and Asian banks begin to flounder due to Y2K programming errors, how long will the U.S. government working with worldwide banks be able to hold them up? If there is a subsequent global recession and you lose your job, how will you feed your

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[6] The example above involves a financial infrastructure vulnerability resulting from the fractional reserve system (which allows banks to lend out more money than they have in reserve). More information on the banking system and its current status can be found in Chapter 5 of Hyatt's book, *The Millennium Bug*, and by going to the www.y2ktoday.com website and looking at Financial Industry News, such as the Weiss Bank ratings (which suggest that significantly more than 12 % of US banks and S&Ls are behind with their Y2K problem solving). Please also see www.marketpartners.com (for banking institution preparedness – or lack thereof).

[7] 4 January 1999, Jim Lord, www.SurviveY2K.com.

[8] An April 13, 1998, *USA Today* article noted, for example, that only 8 percent of German companies have a formal program to prepare for the Y2K problem compared to 80 percent of large U.S. companies. Similar figures apply to much of the world.

family? [9] Or on a national basis, if the U.S. runs into power generation problems as expected by many government overseers [10], what will you do if the power goes out at your home for an extended period? The government cannot step in and supply you electricity. Nor can the government feed you or provide you water for very long if there are widespread power outages. Moreover, the government has made some grave official statements about their concern about Y2K's impact on food productions and distribution.[11]

And third, we need to take the government at its own word when it says it cannot solve all our problems. For example, the Washington National Guard plans to mobilize half its troops at the turn of the century in anticipation of possible disruptions of electrical or other essential services or if there is civil disorder. [12] Other National Guard units are making similar preparations. According to WorldNetDaily: "*The National Guard is planning its first national mobilization of troops since 1940 in preparation for civil unrest resulting from the Y2K millennium bug*".[13] Another example is from the Federal Emergency Management Agency (FEMA) website[14] that states:

> **Government agencies, public utilities, businesses, and individuals should consider disruption of computer-based systems a serious risk to continuity of operations (COOP). It should be noted that FEMA has no authority or capability at the national level to prevent computer disruption, beyond its own agency, or to respond to the causes of computer disruption, such as Y2K conversion or cyber terrorism. More information on what FEMA can do and its Y2K efforts may be found in recent testimony given before Congress.**
> **The efforts of FEMA and all emergency management and fire service organizations cannot be viewed as a substitute for personal responsibility and personal preparedness. Every organization and every individual, in public and private life, has an obligation to learn more about this problem and their vulnerability, so that they may take appropriate action to prevent a problem before it occurs. FEMA is working with the emergency management and fire services communities to raise awareness, to increase preparedness, and to stand ready to provide Federal response assistance to State and local governments, if that is required.**

And as reported by S. Archer[15]: "*According to Mary Walker, a spokeswoman for FEMA in the Office of Emergency Information, some of the consequences of Y2K-related computer failures will be minimal, such as the shutdown of individual personal computers. Others, however, could have dire consequences, such as power and communication failures with immeasurable impact on the nation's commerce and infrastructure.*"

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[9] See www.yardeni.com for information from Deutsche Bank's Chief Economist, Dr. Ed Yardeni. He believes that there is a 70% chance of a global recession due to Y2K (see www.yardeni.com/y2kbook.html#B1.1). He also believes that profits will be down 24% in the year 2000 (see page 2 of Deutsche Band Research "Global Portfolio Strategy" October 27, 1998).

[10] Senator Bennett (R-UT) said that: "I think the chances of regional blackouts and heavy brownout activity throughout the grid are about 80%". See also Rick Cowles' website at www.euy2k.com for an explanation of Y2K power issues.

[11] Secretary of Agriculture, Dan Glickman, said, "I must confess, however, that until recently I hadn't thought very much about the connection between food on our tables and computers. But, as a new millennium approaches, that link is becoming all too clear.... We are facing the potential of serious disruption because of this problem...." See www.fsis.usda.gov/om/y2ksecy.htm for complete text.

[12] Seattle Post-Intelligencer, January 6, 1999, Pg. 1, *Troops Are Prepared For Computer Chaos*, by Ed Offley.

[13] From http://www.worldnetdaily.com/bluesky_exnews/19990106_xex_the_plan_mas.shtml

[14] From http://www.fema.gov/y2k

[15] From www.worldnetdaily.com/bluesky_exnews/19990108_xex_fema_urges_p.shtml.

### 2.c Myth #3. "If there is a problem, it won't start until January 2000."

The Director of the Defense Intelligence Agency (DIA) sent out a message on 16 December 98 to alert the Department of Defense that Y2K problems may start long before January 1st, 2000. Here are some excerpts from that message.

PRIORITY
P 162009Z DEC 98
FM DIA WASHINGTON DC//DR//
UNCLAS
GEN HUGHES SENDS
SUBJ: WARNING OF DATE ROLLOVERS LIKELY TO AFFECT COMPUTER SYSTEMS IN 1999

1. (U) WHILE ATTENTION IN THE MEDIA AND ELSEWHERE IS FOCUSED ALMOST EXCLUSIVELY ON 31 DECEMBER 1999 AS THE DATE FOR POTENTIAL SYSTEM CRASHES, A NUMBER OF EARLIER DATES MAY ALSO PROMPT DIFFICULTIES.

2. (U) IN THE PAST, PROGRAMMERS FREQUENTLY USED THE NUMBERS "999" AND/OR "9999" TO INDICATE "END-OF-FILE," "INVALID," "IGNORE," "INFINITY," OR TO TERMINATE A PROGRAM. SINCE IT IS LIKELY THAT SOME COMPUTERS OR EMBEDDED CHIPS WILL MISREAD DATES IN WHICH MULTIPLE "9'S" APPEAR CONSECUTIVELY, Y2K STYLE COMPUTER PROBLEMS COULD OCCUR THROUGHOUT 1999.

3. (U) THE FOLLOWING DATES IN 1999 ARE BELIEVED TO BE SIGNIFICANT. HOWEVER THIS LIST SHOULD NOT BE CONSIDERED EXCLUSIVE. PROBLEMS MAY EMERGE ON OTHER DATES WHICH HAVE NOT YET BEEN ANTICIPATED. DATES BELIEVED TO BE THE MOST SIGNIFICANT ARE MARKED WITH ASTERISKS (**). ...

...
C. MARCH 1, 1999; JULY 1, 1999; OCTOBER 1, 1999: FISCAL YEAR 2000 FOR MANY BUSINESSES AND INDUSTRIES WILL BEGIN ON THESE DATES. IN ADDITION, THE SECURITIES INDUSTRY WILL BEGIN SIMULATING 29 DEC 99 TRADING ON 1 MARCH 99.
D. APRIL 1, 1999: NEW YORK STATE, CANADA, AND JAPAN FY 2000 BEGINS.
E. APRIL 6, 1999: UK FY 1999-2000 BEGINS.
F. APRIL 9, 1999: SYSTEMS USING SHORT JULIAN DAYS SINCE THIS IS DAY 99 OF YEAR 99 AND THIS WILL PRODUCE A 9999 DATE BLOCK.
G. JULY 1, 1999: FY 2000 BEGINS IN 46 US STATES.
H. AUGUST 22, 1999: UNREMEDIATED GPS [author's note: GPS stands for Global Positioning System and is used throughout the world for providing location data for airlines, ships, etc.] SYSTEMS MAY BE AFFECTED.
I. SEPTEMBER 1, 1999: FY 2000 FOR TEXAS; IN ADDITION A COMPUTER DATE BLOCK WILL DISPLAY THREE CONSECUTIVE NINES (NINTH MONTH AND 99TH YEAR).
J.**SEPTEMBER 9, 1999: COMPUTER DATE BLOCKS WILL DISPLAY FOUR CONSECUTIVE NINES (NINTH DAY, NINTH MONTH, 99TH YEAR).
K. SEPTEMBER 23, 1999: 99 DAYS UNTIL YEAR 2000.
L. OCTOBER 1, 1999: FY 2000 BEGINS FOR US GOVERNMENT AND STATES OF ALABAMA AND MICHIGAN.
M. **DECEMBER 31, 1999: LAST DAY BEFORE YEAR 2000. MANY SYSTEMS WILL NOT OPERATE CORRECTLY AS THEY TRANSITION TO THE NEXT DAY. ALSO, SYSTEMS (SUCH AS IBM TAPES) USING "99365" AS A "NEVER EXPIRES" DATE MAY FAIL ALSO.

## *3. Y2K Realities*

### 3.a The problem is big, expensive, and infectious.

The Y2K problem is large beyond comprehension and is expected to cost hundreds of billions of dollars to fix. [16] Computer experts estimate that there are hundreds of billions of lines of computer code in numerous languages that must be diagnosed, portions rewritten, and then tested. In addition, billions of embedded computers hidden within virtually all sectors of modern machines must be examined, and a small percentage of these painstakingly replaced (and sometimes remanufactured) and tested.[17] Finally, millions of personal computers and hundreds of thousands of mainframe computers need to be checked for Y2K compatibility – and most of these are projected to need some form of fixing.[18] This is truly a global problem that touches on every aspect of modern material life.

The reason I call the Y2K problem "infectious" is because even if an otherwise healthy organization has its internal systems ready for Y2K, corrupted data from external "Y2K sick" sources can infect the databases. This is particularly true of the banking and financial industries, which perform millions of date sensitive calculations daily and then transfer the results externally to related organizations. In addition, although a healthy organization's internal computer systems may be unaffected by Y2K, its external suppliers of information or services or supplies may not be able to meet their obligations. Few organizations have enough supplies on hand to run without external support or supplies for very long. In the extreme case, think of how long a typical organization can operate without power or telecommunications. In a more moderate case, think of how an organization would fare if it had trouble with obtaining parts from one of its critical suppliers. This is a very real possibility if many small to medium sized companies go out of business as a result of Y2K problems as some researchers predict. [19]

In a larger sense, our nation's health is dependent on the well-being of other key nations and corporate entities. Our nation's health is maintained by billions of interconnecting arteries of utilities, finances, raw materials, communications, etc., that extend from the private sector through local and state governments into the international arena. A strong testimony to this "health" interdependency is how our government does not allow any major corporation or bank to fail in our country, as well as not allowing any other major nation's financial system to collapse. Hence our government helps to bail out companies like Chrysler and major industries like that of farming, or an entire country's financial situation, as happened with Mexico, Korea, and Russia. Our government does this for reasons beyond just kindness. We recognize that if a major institution or connected country economy is disrupted (becomes sick), it may greatly disrupt our own interconnected society.

### 3.b There is no time to completely fix the problem.

The Y2K problem is so massive that it cannot be completely fixed prior to 2000. Ed Yourdon, a respected software engineer and author of over 200 technical articles and 24 computer books, states there are not enough programmers in the U.S. to fix the problem in time. And while he feels the U.S. is behind, he also believes that Europe, Africa, Asia, and South America are even further behind. He states:

> *"No matter what the government tells you, no matter what kind of optimistic remarks you hear from people, it's simply too late to fix everything. ... Where we are now is the hope that we might fix roughly 75% of our computer systems. So what the Year 2000 Problem boils down to*

[16] See M. Hyatt's book, *The Millennium Bug*, pages 37 – 38.
[17] See www.icc.org.uk/2000risk for a detailed explanation of the Y2K embedded systems problem. *The Millennium Bug*, pages 25 – 31, provides an excellent overview of this problem. See also http://millennia-bcs.com/hlthsnry.htm.
[18] See the January 1999 edition of *PC World*, page 91. Also M. Hyatt's book *The Millennium Bug*, pages 19 –25.
[19] See http://techweb.com/se/directlink.cgi?CWK19970505S0040 for more details from a May 05, 1997 *Internet Week* article titled "YEAR 2000 COUNTDOWN -- Protect Your Net!" by Tim Wilson.

*is: what will be the impact of approximately 25% of the computer systems in this country not working?"* [20]

In February of 1999, Steve Horn, Chairman of the Government Reform Subcommittee on Government Management, Information, and Technology, released the committee's first set of 1999 grades of the federal government's progress toward solving the Y2K computer problem. House Majority Leader Dick Armey made the following statement about the grades, which are based on progress reports submitted by the agencies and departments: *"This government is still not meeting its responsibility on the Y2K problem. "Steve's committee found that over 50% of the government's critical computer systems are still not ready for the year 2000. If that does not change significantly, American travel, health benefits, and national security will all be affected. That is not acceptable. "While many federal agencies and departments have shown great improvement, it is obvious that there is much work to do in the next 312 days. This Congress is committed to ensuring that next time, the Administration gives the American taxpayer a straight A report card."*[21]

While the overall government report card improved to a C+ average, Representative Horn's report card gave the following less than encouraging grades to some key departments:

| | |
|---|---|
| Department of Agriculture: | C |
| Department of Defense: | C- |
| Department of State: | F |
| Department of Transportation: | F |

When looking at the above government "grades", some explanation is required. One of the best statements I've seen that gives perspective on these grades was given by Mrs. Paloma O'Riley, Co-founder and Research Director, The Cassandra Project, in testimony before the Subcommittee on Science and Technology. In it, she states:

*Very few if any people with hands-on acquaintance with the year 2000 dilemma will state that all the problems will be found and fixed, and in time. Those that do know couch the uncertainties and unknowns in reassuring terms; terms that are confusing and misleading the public. An example of such a statement is the often heard "...our 'mission critical' systems will be ready". Other statements such as how a particular agency "will be compliant" minimizes the problem and ignores --deliberately or otherwise -- the interconnectedness of all systems.*

*"Compliance", in the face of the level of our dependence on critical infrastructure, is an illusion.*

*It's like kicking the tires of a car and declaring that the vehicle is in working order.* ***With immense admiration and gratitude for the work Congressman Horn has done, I must respectfully submit that the time for the grading of individual agencies has passed. Such a practice, while an excellent indicator of how work is progressing within, does not indicate whether a successfully remediated agency will be able to function come 2000.***

*For example, if agency A depends on B, and B has not eliminated all problems -- then it does not matter whether agency A was successful in its remediation efforts. If A and B have*

[20] From *Y2K News Magazine*, Fall 1998, in the article "Time Bomb 2000" by Ed Yourdon. See also his book with the same name, *Time Bomb 2000*, or his internet site at www.yourdon.com.

[21] See http://www.freedom.gov/y2k/grades/grades.asp for more information.

*successfully remediated, but the electricity goes out, the telephones go down, or the post office (for example) cannot deliver, than what was accomplished? We must recognize and admit that we are only as 'compliant' as the weakest link in the chain.*

*Compliance may be practically unattainable, but contingency planning is not. Government, business and the public can develop backup plans in the event we experience failure or severe disruption at any point in the system or infrastructure. Unfortunately, many businesses, and state and government agencies are not engaged in contingency planning. Contingency planning must be made the number one task on the list, performed concurrently with remediation.*

*As for the public, they must be given enough notice and information to form their own contingency plans. Waiting to tell the public is not an option, and puts us all at an extreme disadvantage when suddenly confronted with Y2k problems.*

*The bottom line here is, we will experience failures and/or interruptions in critical services due to Y2k. What we do not know is exactly where, how serious, or for what duration. In the face of so many unknowns, the only reasonable and responsible course of action for the administration is to inform the public. Explain in plain words what the nature of the year 2000 problem is, the complexity, likely impacts and implications, and -- above all -- what they CAN do. And there is much the public can do.*

*Thousands of people across the US and Canada are now taking steps to prepare for potential worst case Y2k scenarios. They are not panicking. They are making reasoned and appropriate decisions how they may best take precautions. By evaluating their personal dependence on critical infrastructure, they are developing contingency plans for themselves and their families. By talking to their neighbors, they are learning who among them may be particularly vulnerable and unable to prepare, and -- together -- they are attempting to create a safety net for them if needed.*

*These people are not survivalists, paramilitary, or religious fanatics. They are doctors, school teachers, insurance brokers, firefighters and ministers. They understand that some events are beyond the scope of any organization such as FEMA or the Red Cross to respond; that Y2k problems will occur worldwide, with domino effects on a global level. People are willing to accept that they may need to be self-reliant for a short period of time, without the comforts and services we so often take for granted. In addition, there is a realization that this problem has gone beyond blame; and that the time has come to put aside differences and develop new ways to work together, cooperate with our neighbors, and talk to local business and government.*

*By being silent or equivocal, the administration is hampering these essential grassroots efforts. Too many individuals and groups have fallen by the wayside in recent months. The vehement denial of the reality of Y2k problems, reinforced by lack of authoritative corroboration, is taking its toll. Those attempting to remediate the problems are subject to derision, hostile denial, and little or no support. A climate of acceptance of the existence of Y2k problems, backed with a willingness to discuss the broader ramifications, is necessary if remediation and preparedness efforts on all fronts are to succeed. Silence, soft-peddling, ambiguity, and hiding from the problems before us must end, this day.*

*Information given to the public will not cause 'a panic' - the primary reason given why it's not discussed. When Prime Minister Tony Blair told the British people about the year 2000 problem, panic did not ensue. What frightens people is lack of information, rumors and misstatements, and a clear lack of leadership.*

Earlier, Representative Horn stated, in a March 4, 1998 press release stated that, "*It is increasingly clear that a large number of federal computer systems simply will not be prepared for the date change on December 31, 1999.*"

### 3.c People are misstating how far they have come in fixing the problem.

While most people try to be honest, there is great pressure on both the private and government sectors to lie or be unreasonably optimistic about their readiness for Y2K. While few officials will say unequivocally that they will have no Y2K problems (for fear of future lawsuits or because they honestly don't know), many officials are painting an overly optimistic picture. Some of the reasons for this are that a company that admits it could have major Y2K problems may have its investors move to a competitor who claims they are ready for Y2K. Ask yourself, if you hear that your bank is having problems with Y2K preparations, would you keep your money there? For high government officials, there is personal and political pressure to avoid saying that they, as managers of national resources and guardians of the public trust, have inadequately addressed the problem. I work in the government and see first-hand how much pressure there is to try to quickly improve our Congressional Report Card grades (see the previous section for details)..

A 27 November 98 *USA Today* article highlighted the problem when it reported [22]:

> *The Pentagon office responsible for safety and security of U.S. nuclear stockpiles and emergency response in a nuclear incident acknowledges falsifying readiness reports on the looming Year 2000 computer problem. The Defense Special Weapons Agency (DSWA) claimed that three of five so-called "mission critical" computer systems, essential to conducting its most primary duties, were fully prepared to face the computer crisis despite never conducting necessary testing, according to a recent Defense Department Inspector General's Report.*
>
> *"We recognize and agree with the findings of the Inspector Generals report," says Capt. Allan Toole, who was recently assigned to correct the Year 2000 (Y2K) problems at the DSWA, which was absorbed into the newly created Defense Threat Reduction Agency on Oct. 1. He would not discuss the agency's previous false reporting on Y2K.*

This same article followed with another sobering note:

> *As recently as a few weeks ago, Sen. Bennett was fond of noting that officials of government and industry "all lie to us about Y2K" when asked to testify about their level of readiness.*
> *But heading into the Thanksgiving weekend he says one of the things he is thankful for is that "there aren't as many people lying to us as there used to be."*

How about banks? I personally wonder why banks are not allowed to disclose what grade they received in their latest state or federal Year 2000 audit. Perhaps it has something to do with predictions by respected economists, like Dr. Ed Yardeni, that "from 5% to 20% of banks will fail as a direct result of the Year 2000." [23] A quote regarding the banking industry that should give everyone some pause is from the *Y2K Today* web site:[24]

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[22] See http://www.usatoday.com/life/cyber/tech/ctd907.htm for the entire *USA Today* Article.
[23] From *Y2K News Magazine*, Fall 1998, in the article "Y2K CPR", page 9.
[24] See http://www.y2ktoday.com/modules/home/default.asp?id=455&feature=&type=/ for the entire article.

*Next time an official from your bank or savings and loan (S&L) institution coos reassuringly at you that everything is under control regarding the Year 2000 problem, be prepared not to take their comments at face value. Research just out from Weiss Ratings suggest that around 12 percent of US banks and S&Ls are actually behind with their preparations for the IT (information technology) problem. ... Among the 1,500 depository institutions participating in the survey, 127, or 8.5 percent, received "below average" Year 2000 grades, reflecting inadequate progress toward resolving their Year 2000 - related problems, while an additional 54, or 3.6 percent, received "low" marks for their slow progress. ... According to the $149 report, since the response to the survey was voluntary, it is safe to assume a tendency for the better-prepared institutions to come forward more readily, implying that significantly more than 12 percent of the institutions could be behind schedule in their Year 2000 preparations ... For $15 per company, consumers can acquire both a Weiss Year 2000 rating and a Weiss Safety Rating on a financial institution by calling 1-800-289-9222.* [25]

A final extended quote that should be noted regards potential lying within the power industry. This quote is taken from the Gary North website on Y2K matters [26]:

*On August 27, I spoke before a meeting of 500 people -- 5% of a local town. At that meeting, representatives of several industries spoke: banking, telephone, electrical power.*
*When pressed by someone in the audience, the representative of the power company insisted they could run the entire company on manual systems without compliant computers. Forget about noncompliant chips. The company can do it manually.*
*I asked him straight: Can they run the SCADA (supervisory control and data acquisition) system without telecommunications? That's the computerized system that tells them how much power is running through the lines. "Yes," he said.*
*A week before I had been told by an engineer with a large urban power company that without SCADA, they would fry the lines permanently. "There is no way we could run the system manually."*
*I guess engineers don't agree.*
*I told the audience this:*
*"No system can be switched to pre-computer manual operations without training. Any outfit that claims that it can be run manually had better have a highly trained technical staff to take over in 2000. Does the outfit have a training manual? How much training money has it budgeted?"*
*Any outfit that does not have the staff being trained right now is lying when it says that it can be run manually. It cannot be run manually by phantom workers. The men who knew how to run it manually were fired 30 years ago. The manual systems were replaced. The industry did not spend hundreds of billions of dollars on computerization so as to have two separate operation systems. They spent the money to get rid of manual systems.*
*Any time you hear some representative tell you his public utility can be run manually, ask five questions:*
*1. How many trained personnel do you need, including substitutes, to run your system manually?*
*2. How many are currently undergoing training for this task, and how many have finished it?*
*3. May I come in and see your training manual that you use to train these people?*
*4. How much money has your company budgeted to train this staff?*
*5. How much has already been spent?*

[25] Reported by *Newsbytes News Network*, author Sylvia Dennis, 22 October 1998 (see the previous web address).
[26] See http://www.garynorth.com/y2k/detail_.cfm/2439 for the full article and for links to his extensive Y2K site.

*You must call their bluff. They're lying. They have no intention of trying to run anything manually. It's just a PR ploy. It's Monica Lewinsky syndrome. Nobody suffers any consequences for lying to the public.*
*But can't they be sued for lying, i.e., misleading the public? Not if all companies in the industry collapse for the same reason. They will share the blame, or pass it on to a higher authority: "An act of God."*
*When you catch one of them in a lie this big, you can rest assured: he knows that it can't be fixed by anyone, so he knows he can't be successfully sued.*
*Training to convert to manual systems won't work, of course. The power industry can't be run manually, and it's too late to fix the code. Besides, nobody in the industry will pay any attention to such warnings. But at least it lets the industry know that you don't believe the lie any more.*
*Dick Mills, who is a public optimist about the power grid, recently issued a warning to the industry: begin contingency planning. This includes training. This is the best advice that anyone could give the power industry -- not because the advice could work at this late date, but because it's time to call their bluff.* [27]

Another aspect of the potential SCADA problem (that is not directly related to the Y2K problem) was discussed in a speech by Deputy Secretary of Defense John J. Hamre. He points out how SCADA's are very vulnerable to hacker attacks (see my earlier remarks on cyber attacks). He stated:

*This country is wide open to attack electronically. ... Now, why are we so vulnerable as a country? We're vulnerable because of the enormous productivity improvements that we've sought through information technology in the last 20 years. You're familiar with the SCADA system, Supervisory Control And Data Acquisition Systems? These kinds of systems are used to control physical networks, for example remote switches on a power grid that will open additional switches or bring on new transformers or sensors, valves and pumping stations that are used to regulate the flow of oil through a pipeline. These systems are used for water irrigation systems in the west. America's infrastructure is being run now through these Supervisory Control And Data Acquisition Systems, SCADA systems. They're commercial systems. Increasingly, American business, in order to save money and to shed itself of the cost of proprietary networks, is moving these systems onto an Internet-based communications network. So we're finding increasingly, America's business and utilities are controlling the infrastructure through a technology that was never designed with security in mind.* [28]

## 4. *Reasonable Responses*

### 4.a Developing preparedness plans

*But the noble man devises noble plans; And by noble plans he stands.*
*Isaiah 32:8 [New American Standard Bible - NASB]*

*It is not good to have zeal without knowledge, nor to be hasty and miss the way.*
*Proverbs 19:2 [New International Version - NIV]*

The Biblical passages above suggest at least two things. First, noble planning is a sign of responsible character and will be worth the effort. Second, stepping out too quickly with action, especially without

[27] See http://www.garynorth.com/y2k/detail_.cfm/2439 for the full article and for links to his extensive Y2K site.
[28] Speech to Fortune 500 CIOs Forum, July 21, 1998, www.defenselink.mil/news/Aug1998/t08121998_t072198.html.

adequate knowledge, can waste precious time and resources and can lead to disaster. Hopefully, the following sections will provide some practical information for you to develop and implement wise and balanced plans to avert future disasters.

I am especially concerned that people will operate based on panic, rather than on reasonable and sane actions. Panic does not help any situation. In fact, panic, not technology, may be the biggest issue we face with the Y2K. Hence, let me begin by saying that there is always time for reasonable and calm planning, even in the midst of crisis. For those who believe the Bible is God's word, you can also take comfort in the following passages:

*Trust in the LORD with all your heart, and do not lean on your own understanding. In all your ways acknowledge Him, and He will make your paths straight. Proverbs 3:5-6 [NASB]*

*Do not fear, for I am with you; Do not anxiously look about you, for I am your God. I will strengthen you, surely I will help you, Surely I will uphold you with My righteous right hand. Isaiah 41:10 [NASB]*

*God is our refuge and strength, an ever-present help in trouble. Therefore we will not fear, though the earth give way and the mountains fall into the heart of the sea. Psalm 46:1-2 [NIV]*

There are a few things I recommend you do as you begin your Y2K preparations. First, as you review the remainder of this paper, make an unprioritized list of what you think you should do. Second, make a first cut at prioritizing your list and developing an implementation plan. Third, if possible, seek professional counsel in areas that you think are important, but complicated. Fourth, discuss your ideas with affected family and friend(s) (if trusted) and get their perspectives {and for those with a spouse, try to get on the same page before spending significant resources}. Make a final prioritized list and implementation plan after considering the following:

- How best can I provide for my immediate family? How can I be sensitive to their beliefs and special needs?
- How best can I help my extended family? What do I responsibly need to tell them?
- How can I help my friends and neighbors? What do I responsibly need to tell them?
- Where do I need the help of others?
- What services can I provide to the general community? How can I help the community be prepared?

Sixth, have a plan to develop additional helpful skills for times of crisis. And seventh, practice not using all the amenities of modern life for a brief period, to develop preparedness skills and to discover where your plans and preparations need to be adjusted.

Table 1 provides a list of some additional places to go for additional Y2K planning assistance.

Note: TACDA does not necessarily endorse all of the views presented in these materials – some of them may contain information that is inaccurate or that confidently overstates with certainty the gravity of the problem, especially if it is oriented towards selling a service or product. The reader should also be aware that TACDA, while endeavoring to be unbiased, does sell some items for fundraisers that are recommended. TACDA does not receive compensation for any recommended items, unless it is sold through us {these items are clearly noted throughout this report}.

**Table 1. Y2K Planning Resources**

| | |
|---|---|
| ***Don't Get Caught with Your Pantry Down!*** By James Stevens. An extensive (500+ page) consumer's reference guide to the preparedness industry. Includes profiles of 5,000+ U.S. and Canadian businesses providing in-home food storage and emergency preparedness products. Contains helpful information on home pantry/storage, records keeping, acquiring gold and silver, government information on preparedness, preparedness books, expositions, and how to contact a multitude of emergency goods suppliers. | Available through TACDA at 800-425-5397 for $26.95 plus shipping. Published by Historical Publications Inc., and available directly at 800-880-6789. |
| ***Making the Best of Basics, Family Preparedness Handbook***. By James Stevens. 300+ pages of practical information on in-home food and water storage, wheat cooking, triticale cooking, powdered milk, honey, self-health, sprouting, drying fruits and vegetables, fuels storage and a compendium of preparedness resources, both governmental and commercial. | Available through TACDA at 800-425-5397 for $17.95 (special rate) plus shipping. |
| ***Whatcha Gonna Do If the Grid Goes Down?*** By Susan Robinson. This easy reading 144-page book is one of the best non-technical works directed at those wanting practical advice on how to prepare. It provides many useful worksheets and can be used by "soccer moms", etc. It has chapters on how to cope with: Life without the Grid, Food Storage, Water Basics, Food Preparation and meal planning, and "Light, Heat, Washing and Waste". | Available by calling: 1-877-925-7243. Current price is $22.95 plus shipping. |
| ***Emergency Survival Communications*** by Dave Ingram. 182 pages of useful information on the many types of communications systems that are available to anyone in time of need. Details are provided on short wave, amateur radio, citizens band (CB), federal services, weather services, overseas news services, etc. Shows you where/how to choose the proper equipment, and how to build your communications system (including alternative power sources). | Available at 800-889-2839 for $19.95 + shipping or at www.fm2way.com/survival.html |
| ***Lehman's Catalog and website.*** Lehman's has been serving the Amish and others without electricity with products for self-sufficient living (like books, housewares, grain mills, stoves, toilets, refrigerators, pumps, water filters, tools, etc.) since 1955. You can order their large catalog by sending $3 and your complete name and mailing address to : Lehman's, Dept 8-PJB, PO Box 41, Kidron, Ohio, 44636 | Available at 330-857-5757 for $3. Also visit their website at: www.lehmans.com (note: not as extensive as paper catalog) |
| ***Northern Tool and Equipment Co.*** Good source for tools, generators, lawn and garden equipment, and much more. Many of their catalogs are offered for free. | Available at 800-533-5545 or at www.northern-online.com |
| ***THE Y2K PERSONAL SURVIVAL GUIDE, by Michael Hyatt.*** Michael Hyatt has finished a new book entitled *The Y2K Personal Survival Guide: Everything You Need to Know to Get from This Side of the Crisis to the Other.* Provides a broad range of specific preparedness information and recommends where to buy things. | www.michaelhyatt.com/survival.htm The book will be available in March 99 at bookstores. |
| Great resource: Online **"BUILDING YOUR ARK"** workbook and ***ACTION CHECKLIST (250+ total pages)*** is available for $19.97, NEW ! You may now order **"BUILDING YOUR ARK"**, with the ***ACTION CHECKLIST,*** in hard copy (same info.) for $29.97, (taxes included), plus $3.98 (S & H) = total $33.95. | Call toll-free 1-888-240-9074 to order this book. http://www.yourark.com/welcome.htm |
| ***Noah's Ark Preparedness Website.*** Provides an extensive list of practical preparedness articles. TACDA is nonsectarian and hence does not endorse any religious views expressed at this and related sites. | www.millennium-ark.net/News_Files/Hollys.html |
| ***The Moneychanger Website.*** This interesting site by Franklin Sanders can help debunk some of the myths out there about gold and silver collecting. TACDA does not necessary endorse all of his views. | www.the-moneychanger.com |
| ***Y2K for Women.*** A website for information on the Y2K problem from a woman's perspective. Karen Anderson also has a book titled *Y2K for Women: How to Protect Your Home and Family in the Coming Crisis.* Cost: $19.95. See also: www.mrssurvival.com for another site written by women on Y2K issues. | See www.y2kwomen.com for more information. Or call: 877-925-4966 |
| ***Sharefin's Internet Links*** provides a very comprehensive listing of preparedness sites. TACDA does not necessary endorse all of the sites listed by Sharefin. | www.cairns.net.au/~sharefin/Markets/Alternative.htm |

### 4.b Water

Water should be near the top of any disaster planning list as you can only live a few days without it. Public drinking water systems could be disrupted due to Y2K problems associated with power outages and the software and numerous embedded controls used to mix chemicals and control the water flow. Tests and surveys of municipal water systems for Y2K have shown that major problems can occur that could disrupt public water for an extended time and that in many cases, little is being done to address the problem. [29]

**Step 1: Water Survey.** A first step for people planning for Y2K problems is to take a survey of your local water situation. For example, does your home or apartment use a well or do you rely on public water? If your home uses a well, what would happen to the water pumping mechanisms if the power went out? If you live by a stream or lake, how would you transport and purify it for your personal use? If you are on public water, you may want to get a statement from the local water municipality about whether they are finished with Y2K testing and proven Y2K ready? Be careful if you hear general statements about how there should be no problem, especially if they have done no testing or cannot summarize the results. Also, you may want to ask your local water supplier how long they could operate if there is a power outage or a disruption in the supply of chemicals. Be sure to get all your answers in writing.

**Step 2: Water Needs Assessment.** A second step is to assess how much water you think that you, your family, etc., will need. Table 2 shows some recommended water levels for various situations.

**Table 2. Required Water for Adults**

| Situation | Suggested daily water needs |
|---|---|
| Absolute minimum for drinking in cool climate<br>- None for cooking or washing [30]<br>- Assumes cool weather, with little food and activity | 1.5 quarts |
| Suggested minimum for drinking in cool climate<br>- None for cooking or washing<br>- Assumes cool weather and some moist food and activity | 2 liters (like the soft drink bottles)<br>Nursing moms will require more. |
| Suggested minimum for drinking and living<br>- Allows for some cooking and washing in cool weather<br>- Minimum needed if living/working in hot climate | 1 gallon |
| Recommended practical level<br>- Allows for cooking dry foods, washing utensils and the body<br>- Enables heavy physical exertion and hot weather activity | 2 gallons |

Hence, my recommended formula for figuring how much water you practically need for the people you feel responsible for is:

[Number of people] x [2 gallons] x [how many days] = number of gallons needed.

**Step 3: Water Storage.** A third step is to decide where you will obtain water and how and where you will store it. If at all possible, it's a good idea to store at least some water in your residence as soon as possible. It's best to store your water in a place in your home other than the garage, as fumes from a garage can penetrate many water containers. Water that is bacteria free should store for several years without any problems. Table 3 (that follows) provides some options for storing water.

[29] See Richard Wiles' book, *Judgment Day 2000*, pages 180 – 183 and Michael Hyatt's book *The Millennium Bug*, pages 75-77, 162-163 for examples and details regarding municipal water problems in light of Y2K.
[30] *Nuclear War Survival Skills*, Cresson Kearny and Oak Ridge National Labs, 1987, page 66.

Thankfully, your home typically will have tens of gallons of potable drinking water naturally stored in its existing water systems. The best home source for water is from the water heater (drained from the faucet at the bottom) and from draining water from the existing pipes from the lowest faucet in the home. To use the water from your hot water heater/tank, be sure the electricity or gas is off, and open the drain at the bottom of the tank. Start the water flowing by turning off the water intake valve and turning on a hot-water faucet. Do not turn on the gas or electricity when the tank is empty. To use the water in your pipes, let air into the plumbing by turning on the highest faucet in your house and draining the water from the lowest one. Water can also be taken from the toilet water holding tank (not the bowl!!), but must first be purified if used (note: do not drink this water if there is a fragrance or cleaner/disinfectant installed in the tank). Waterbeds hold up to 400 gallons, but some waterbeds contain toxic chemicals that are not fully removed by many purifiers. Though not recommended, you can use a new waterbed for storing water. Drain it yearly and refill it with fresh water containing two ounces of bleach per 120 gallons. Do you know the location of your incoming water valve? You'll need to shut if off to stop contaminated water from entering your home if you hear reports of broken water or sewage lines. [31]

**Table 3. Options for Water Storage (Part 1)**

| Container/Capacity | Pros and Cons | Costs and Suggested Suppliers |
|---|---|---|
| **Soft drink plastic bottles** / 2 liters | **Pro**: No cost. These bottles will hold up well over the years. Each person, for a minimum daily drinking ration, can use one bottle.<br>**Con**: These bottles do not have handles. | Can be obtained for no cost if you carefully rinse them out with hot water (do not use soap) immediately after use. You then add 4 drops of liquid **Regular** Clorox [32] as you refill each bottle to kill residual bacteria. |
| Plastic **milk jugs** | **Con**: Biodegrade and have milk residue.<br>**Pro**: Useful for temporary water transport. | Not recommended for long-term water storage due to their biodegradation and milk contamination. |
| New, food grade plastic **water barrels/** 15, 30, and 55 gallon sizes<br>[note: add either scant ¼ cup Regular liquid Clorox Bleach or roughly 2 oz. of aerobic oxygen (preferred, but more expensive) to 55 gallons to maintain potability] | **Pro**: Cost-effective. Strong containers that can be stored both inside and out in the sun. Last for years. Can store more vertically than with plastic water bag solutions.<br>**Con**: More expensive than some solutions since need a bung wrench to remove the screw caps and a hand pump to remove the water easily. Not easily moved once filled. Bulky when not used. Freezing can be a problem if outside and over-filled. | The best prices I've found currently (1/30/99) are at 800-560-2334 or www.ghg.net/jlfulcher/index.htm where 50 gal. plastic barrels cost $24.95 and 30 gal. barrels cost $17.95 + approximately $16.75 shipping. 15 gal barrels are $12.95 + UPS ship. www.waterbarrels.com also has competitive prices. You can call them at 888-742-6275 or 877-420-8657. Prices are currently $37.90 + shipping for one 55 gal. barrel. Bung wrench: $9.95, hand pump $22.80 plus ship. |
| See next page for more water storage options ... | | |

[31] Much of the information in this paragraph is taken from the FEMA website: www.fema.gov/library/emfdwtr.htm.

[32] Use only **Regular Clorox** (or equivalent) liquid bleach that has as its only active ingredient 5.25% sodium hypochlorite. Dry or scented forms of bleach can be poisonous, although calcium hypochlorite has apparently been used with success (see next table on water purification). Also, do not use bleach that is over 2 years old as it loses strength over time. Some liquid bleach containers warn, "Not For Personal Use." You can disregard these warnings if the label states sodium hypochlorite is the only active ingredient and if you use only the small quantities in these instructions. (source: FEMA and Oak Ridge National Labs)

**Table 3. Options for Water Storage (Part 2)**

| | | |
|---|---|---|
| Heavy-duty food-grade water bags like **Aquaflex** (formerly Softank) with two openings. One for filling with cap and a drain fitment with built-in faucet. / 30 – 350 gallon sizes.<br><br>Larger sizes will soon be available. | **Pro**: Cost effective. Compact, easily stored when not used. Good tensile, tear, impact, and abrasion resistance. Excellent chemical resistance and freeze resistance (can be nearly filled and then frozen). Foldable, durable, re-useable. **Con**: Can be punctured by sharp object. Not easily moved once filled. Require more horizontal space than barrels when filled. Not UV stabilized so must cover with a tarp or some other means of blocking sunlight if outside. | These are available from TACDA at 1-800-425-5397 or www.tacda.org. Others also offer the Aquaflex.<br>Current TACDA sizes and prices are:<br>3'x3', 30 gallons: $35 + $5.95 ship./handling<br>3'x4', 60 gallons: $46 + $5.95 ship./handling<br>3'x6', 110 gallons: $58 + $5.95 ship./handling<br>3'x8', 150 gallons: $68 + $9.95 ship./handling<br>4'x8', 200 gallons: $79 + $9.95 ship./handling<br>4'x12', 250 gallons: $89 + $9.95 ship./handling<br>4'x15', 350 gallons: $129 + $9.95 ship./handling<br>Note: Some similar products are in the market that leave a bad "plastic" taste in the water and that flatten out like a pancake when filled (they lose their shape) – buyer beware. |
| New, food grade **plastic jugs** / 5 to 7.5 gallons called hedpaks, ecosets, and cubitainers | **Pro**: Excellent for storage and portability (come with handles, spouts). Hedpaks and cubitainers can have a separate faucet added for roughly $2. They can also be stacked. Last for years. **Con**: They are more expensive than some solutions. Can be dangerous if stacked. | The best prices I've found are at www.waterbarrels.com. You can also call toll free at 888-742-6275 or 877-420-8657. $62.40 for 10, 5-gallon hedpaks + shipping<br>$46.50 for 6, 7.5-gallon ecosets + shipping<br>$55.50 for 6, 5-gallon ecosets + shipping<br>$71.20 for 8, 5-gallon cubitainers + shipping |
| **Waterbed** | **Con:** If treated for algae, it is not safe to drink. Not designed for potable water. | Not recommended. |
| **Terra tanks**. Flexible cloth tanks. Sizes from 100 to 50,000 gals. | **Pro:** Very rugged. Can hold a large volume of water.<br>**Con:** Expensive for smaller sizes. | Available through www.waterbarrels.com<br>100 gallons, $400; 1000 gal., $879.<br>5,000 gallons, $2,799; 50,000 gal., $27,999 |
| Other **large tanks or cisterns or wells** that have backup power to operate the pump (or good hand pump backup) | **Pro:** These solutions can provide large volumes of water. Cisterns can be used to collect rainwater and store large volumes of water.<br>**Con:** Can be expensive and usually requires some engineering or fabrication. | Call Jade Mountain at 800-442-1972 or www.jademountain.com. Also see Tanks Direct for various Tank alternatives at 1-800-865-5555. Also: http://www.gelowitz.com.<br>For more info on rainwater systems see: www.rainwatercollection.com and www.greenbuilder.com/sourcebook/rainwater.<br>Large non-electric pumps can be found with Soiltech at 800-296-6026 or with Jade Mountain at 800-442-1972 or with Lehman's at http://www.lehmans.com . |
| **Aerobic Oxygen** additive. | **Pro:** Keeps stored water potable for years. **Con:** Expensive. ~$15 to treat 55 – 110 gals. | Many brands available through sites like www.waterbarrels.com & waltonfeed.com/ion.html. |

**Step 4: Water Filtration and Purification.** A fourth step in ensuring you have sufficient water in times of crisis is to plan for both water filtration and purification. Filtration removes unwanted sediments and dangerous organisms out of the water. Purification ensures that the water is then safe to drink. It is important to have pure water as one sip of impure water can cause weeks or months of intestinal problems. Also, during times of extended public utility outages, many water sources are likely to become more contaminated. The areas of water filtration and purification are somewhat technical, so let me begin with my general recommendations shown in Table 4. If you feel the need to understand more, you can read the remainder of the section. Please see Table 6 for some pros and cons of various water

purification techniques. See Table 7 for more information on where you can purchase various water purifiers.

**Table 4. General Water Purification Recommendations**

| Recommendations | Rationale |
|---|---|
| 1. Buy at least one gallon of **Regular Liquid Clorox bleach** without any fragrance or other additives. When you buy the bleach, put a date on the bottle so that you know when to replace it (replace at least every 2 years). | This is the most inexpensive way to purify roughly 3,000+ gallons. 4 drops of this stirred into 2 liters or quarts of water kills most dangerous organisms if left to sit for a minimum of 1 hour (preferably 8 hours). Note: Chlorine is not effective against cryptosporidium and requires a long contact time (hours) to be effective against Giardia. See Table 6 and Table 7 for details. |
| 2. Buy some "***Potable Agua***" iodine tablets from any major Sporting Goods store if you plan on hiking and need pure water. This product, when used properly, provides good protection against all bacteria and even hardy parasites like Giardia [note: wait at least 1 hour if water is very cold]. A tiny bottle treats up to 50 quarts. | This is an inexpensive (less than $10) way to purify water when traveling [note: not for long term use or for people with thyroid problems or for pregnant ladies – see Table 6 for more details]. When traveling, it is often convenient to carry some small tablets rather than bleach or a larger water purifier. |
| 3. Consider buying a ***British Berkefeld*** **or** ***Katadyn*** ceramic water filter unit if you want to ensure Giardia and cryptosporidium parasites are removed (Chlorine is not effective against cryptosporidium and may not be entirely effective against Giardia). *British Berkefeld* gravity filters have been used for generations by missionaries and others to purify water. The *Katadyn Drip* and *Expedition* (heavy-duty fast flowrate hand pump unit) filters are excellent choices. | These filters are moderately expensive (from $199 to $1,143) up front, but can filter thousands of gallons of water. They are considered the top filters on the market by many. The *British Berkefeld* also reduces pesticides, solvents, chlorine, etc. and is certified by the National Sanitation Foundation (NSF) standards 42 and 53. **See Table 7 for more details/options.** |
| 4. Buy or build a **sun oven** or sun pool. These devices are great for pasteurizing water and have other uses such as cooking food and warming items. | The best known commercially available product is the "*Sun Oven*". This 21 lb. unit is built to last and reaches 350+ ° F even in cold weather. See Table 6 and Table 7 for details. |
| 5. Buy a ***PUR*** **brand gravity-fed water pitcher**. These new water filters are the only ones on the market that I am aware of that remove both cryptosporidium and giardia as well as reducing lead, copper, asbestos, chorine, etc. | These units are inexpensive as far as filters go (I recently bought two filters for less than $35 at *Costco*). They are National Sanitation Foundation (NSF) certified. However, they only purify 40 gallons or so for each filter. **See Table 7 for details.** |
| 6. Use an **aerobic oxygen or silver ion** product to purify your water. They reportedly have a longer shelf-life than *Clorox* bleach, have no known negative health effect and kills giardia and other microorganisms. | They are moderately expensive, but appear to be a great option for effectively removing all dangerous living microorganisms in water. **See Table 7 for details.** [I have not seen a definitive study on effectiveness]. |
| 7. **If you have nothing else**, use a pure silver coin sitting in the water overnight (or for 8 hours). While this is something I have not found specific test data on, I know that silver coins have been used for centuries to purify water. I would assume that stirring the mixture would improve the efficacy. | This is a relatively easy and inexpensive precaution that is not toxic to humans. One pure silver coin left in a gallon of water overnight can kill many bacteria and viruses. [33] [Note: I do not currently have any test data to show how effective this is.] |

Why worry about water purification? If there is any disruption in the public water supply, disease can spread through impure water. A good rule of thumb is to consider all non-treated or non-tested water as impure and capable of causing gastrointestinal (GI) problems. All open-air water sources like lakes and streams should be considered contaminated. Conventional folklore has often stated that cool water from

[33] See http://www.pangea.ca/~h2o/silver.html#footnotes

a mountain stream is probably safe – but this is wrong! Many organisms, like Giardia, can survive for long periods of time in cold water and it can be introduced into the water system by birds and small animals. Even water from a spring may be polluted with dangerous organisms or man-made contaminants (like agricultural and industrial chemicals).

Giardia is the most frequently cause of GI problems associated with drinking water in the U.S. One study on Colorado wildlife showed that 40% of the tested beavers and muskrats had giardia. [34] Other studies have shown that many open-air water supplies in the US contain this parasite [35]and that many animals, like cats[36] and dogs as well as humans, carry this parasite unknowingly. In the U.S., Giardia is the parasite most commonly identified in stool specimens submitted to laboratories. From 1977 - 1979, approximately 4% of 1 million stool specimens submitted were positive for Giardia. Other surveys have shown Giardia prevalence rates ranging from 1 to 20% depending on factors like location and age. [37] Giardia can easily spread anywhere that human fecal matter is present, like at daycare centers (due to the need to change diapers). For those who want to learn more about giardia, please visit: http://www.fc.net/~tdeagan/water/one.html, http://www.esemag.com/0197/giardia.html, http://www.vdh.state.va.us/epi/giard.htm, and http://www.doh.wa.gov/topics/giardia.html.

A common method for purifying water today is to use a filter. Table 5 provides some information on the pore size needed in a filter to strain out specific organisms. The major conclusions that can be determined from this table and from other studies is that to strain out bacteria and parasites, you need to have a 0.4 micron absolute filter or smaller, which is possible with many ceramic and carbon filters today. To filter out viruses, you must have a minimum of a .01 micron size pore that is possible with reverse osmosis filters that are commercially available. See Table 7 for a list of some of the major products available to filter water.

**Table 5. Filter Pore Sizes Needed for Water Purification**

| Organism | Pore Size Needed | Filter Technology to Accomplish |
|---|---|---|
| Parasites (like giardia, cryptosporidium, etc.) | 3 microns | Carbon and ceramic filters with 3 microns absolute filtering capability |
| Bacteria (like Cholera, E. coli, Salmonella – that causes Typhoid) | 0.4 microns | Carbon and ceramic filters with 0.4 micron absolute filtering capability |
| Viruses (like Polio and Hepatitus) | 0.01 microns | Reverse Osmosis filters |

Filters that use ordinary (or even silver-impregnated) charcoal or carbon help improve the taste of water by removing some chemicals and large particles, such as chlorine and dirt, but are not intended for use in filtering out harmful microorganisms. Properly manufactured filters with iodide-impregnated resin are effective at killing most species of bacteria and virus present in water, however, their effectiveness against Giardia is less well known, especially with cold water. Experiments show that many Giardia cysts in cold water (4° C) remain viable after passage through filters containing tri-iodide or penta-iodide disinfectants. [38] In one study where four filters (First Need, H20K, Katadyn, the Pockett Purifier) were evaluated for their ability to remove Giardia cysts, only the First Need and Katadyn filters removed 100% of the cysts. [39]

[34] See www.travelhealth.com/purwtr.htm for more information.
[35] See http://www.fc.net/~tdeagan/water/one.html#Back-country water
[36] See http://www.agric.gov.ab.ca/agdex/600/55-6.html
[37] From: GIARDIASIS: By Dennis D. Juranek, Chief, Epidemiology Activity Parasitic Diseases Branch, Division of Parasitic Diseases, Centers for Disease Control. (See: http://www.fc.net/~tdeagan/water/one.html)
[38] Marchin, B.L., Fina, L.R., Lambert, J.L., Fina, G.T. Effect of resin disinfectants--13 and --15 on Giardia muris and giardia lamblia. Appl Environ. Microbiol. 46:965-9, 1983. (See: http://www.fc.net/~tdeagan/water/one.html)
[39] Ongerth JE, Johnson RL, Macdonald SC, Frost F, Stibbs HH. Back-country water treatment to prevent giardiasis. American Journal of Public Health 1989; 79(12):1633-7.

**Table 6. Pros and Cons of Common Methods for Water Purification (Part 1)** [40]

| Purification Type/Description | Pros, Cons, and Recommendations |
|---|---|
| **Pasteurization**. Used to ensure safe drinks (like milk), occurs at 131° F (55° C) for 30 minutes or at 149° F (65° C) for 1 minute. Water that is "too hot to touch" usually has a temperature of more than 131° F and, often, more than 149° F. The time required for pasteurization normally occurs with momentary boiled water (the time to bring to a boil + the time to cool). Boiled tea or coffee is normally safe to drink. You can use a solar oven to pasteurize (see Table 7). | **Pro:** Requires less fuel to purify water than boiling. **Cons:** (**minor**) Pasteurized water is not sterile (just as with pasteurized milk). Both typically contain some organisms that survive. While there are bacterial spores that can survive brief boiling, no known intestinal pathogen, like giardia, survives pasteurization. **Recommendation**: Do not use with cloudy water or water that has visible sediments (instead, boil for 3 minutes). |
| **Boiling**. All common dangerous microorganisms are killed with 1 minute of boiling (212° F (100° C)). Boil for 3 minutes if water is cloudy. Water does not need to be boiled longer at higher elevations (as some suggest), because even the reduced high-altitude boiling point remains well above temperatures required to kill dangerous organisms. See the above rules under **pasteurization** on **momentary boiling** that in most cases will suffice for safe drinking water. Boiled water will taste better if you put oxygen back into it by pouring it back and forth between two containers. This will also improve the taste of stored water. | **Pros**: Safe method for sterilizing water by killing dangerous organisms such as cholera or giardia. **Cons**: Does not remove chemical pollutants. May require much fuel and a fire resistant pot (boiling one quart of water for a minute typically requires about two lbs. of wood). Also requires time for boiling and cooling. **Recommendations**: If you boil to sterilize your water, be sure to store enough fuel (for example, roughly 4 lbs. of wood for a day's minimum drinking water). You may want to get a **solar oven** or some other renewable energy driven device for boiling (see Table 7 for more information). |
| **Distillation**. Involves collecting the water vapor released from boiling water or from heat-induced evaporation that condenses on a surface and is collected in a clean container. Expedient distillers can be made from common household items like clear plastic, a plastic tube, and a cup. | **Pros**: EPA certified for water purification. This condensed water removes all dangerous substances, even salt. **Cons**: Commercial distillers are expensive and require power sources. Expedient distillers have limited capacity. **Recommendation:** Learn how to build expedient distiller. |
| **Chlorination**. Add 2 drops of Clorox bleach per quart or liter of water (four drops if the water is cloudy), stir and let stand for a minimum of 1 hour (or 8 if water is cold). If time constrained, 30 minutes will kill most organisms, but not Giardia, the most common pathogen in U.S. waters. If the water does not taste and smell of chlorine, add another dose and let stand another 15 minutes. Stir in 1 – 2 scant teaspoons for 10 gallons of clear – cloudy water. [41] At pH values of 7.5+, effectiveness of chlorine is greatly reduced. | **Pros**: Very cost effective. Kills most dangerous organisms. **Cons**: Bad taste. Chlorination is not effective against cryptosporidium (but will kill Giardia with extended exposures). See Footnote 32 on cautions with using bleach. Does not remove chemicals. Loses roughly 50% potency in 1 year. Waiting 30+ minutes. Effectiveness reduced by high pH and dissolved organics (as with cloudy water). **Recommendation:** Buy at least one gallon for purification, cleaning dishes, utensils, sanitation, etc. |

[40] Much of the information in this table was derived from the following government and private sources as found at www.fc.net/~tdeagan/water/one.html, www.fema.gov/library/emfdwtr.htm, www.marinemedical.com/water.htm, www.kansas.net/~duncan/water.html, www.travelhealth.com/purwtr.htm, and www.nutraceuticals2000.com/aerobic2.html.

[41] If you do not have a dropper, use a spoon and a square-ended strip of paper or thin cloth about 1/4 inch by 2 inches. Put the strip in the spoon with an end hanging down about 1/2 inch below the scoop of the spoon. Place bleach in the spoon and carefully tip it. Drops the size of those from a medicine dropper will drip off the end of the strip.

**Table 6. Pros and Cons of Common Methods for Water Purification (Part 2)**

| Purification Type/Description | Pros, Cons, and Recommendations |
|---|---|
| **Iodine**: Iodine tablets are used by the U.S. Army for water purification. Kills most dangerous organisms (can kill Giardia better than Chlorine does). Apparently not effective against Cryptosporidium. A typical dose is 1 tablet for 1 quart or liter of clear water or 2 for cloudy (I would recommend 2 because of giardia even in clear water, but always read instructions of manufacturer). Tincture of Iodine (2% solution) can be added at the rate of 5 – 10 drops (for clear – cloudy water) for one quart or liter. Let stand for a minimum of 30 minutes if clear and warm (or 1 - 8 hours if water is cold or cloudy) before using Iodine treated water. Vitamin C or *P.A Plus* can be added to water **after** waiting the required time to improve the taste of the water. | **Pros**: Fairly low cost. Tablets are portable. Kills most dangerous organisms. Not as affected by dissolved organics and high pH as chlorine. Giardia can be effectively killed with hour-long exposures. [This can also be viewed as a "Con" if you don't like to wait]<br>**Cons**: Does not remove chemical pollutants. Iodine is not effective against cryptosporidium. Tablets typically lose 20% of their potency in 6 months (avoid heat/light/moisture). Waiting 30+ minutes or hours.<br>**Recommendation:** Not good for those with thyroid disease and should be avoided during pregnancy (can cause goiters in newborns). Tablets are useful when traveling. (See Table 7 for more on commercial tablets). |
| **Reverse Osmosis (RO)**. Reverses the natural flow of pure water through a membrane. It does this by putting pressure on impure water and forces it through a filtering membrane to make pure water. Without the pressure, the pure water would flow the opposite direction due to osmosis. | **Pros**: EPA certified for water purification. RO water removes organics, heavy metals, asbestos, and even salt. Used by NASA/Navy. Filters down to levels like .0006 microns.<br>**Cons**: Not portable. Does not remove volatile organic chemicals, like pesticides and herbicides. Needs water pressure.<br>**Recommendation:** Cannot use unless you have water pressure. If you are relying on commercial power to provide water pressure (as the water company eventually does) then you may want to avoid this solution. |
| **Ceramic Filters**: Use a process where water is either gravity fed or pumped through a ceramic filter media. Effective against parasites (like giardia) and bacteria, but typically do not remove all viruses. To overcome this, some add iodine resins. If contain iodinated resin, they can kill viruses, if there is sufficient contact time. Some use silver-permeated ceramic to inhibit bacterial growth. See Table 7 for more information on some manufacturers and their specific pros, cons, and costs. | **Pros**: Depending on pore size, can filter out most dangerous bacteria and parasites. Pump varieties can provide immediate water. Relatively low cost.<br>**Cons**: Filter may have hidden cracks or deteriorate in time. Ceramic filters can crack when frozen with water inside. Cannot entirely filter viruses. Unless used with carbon filters, etc., cannot remove pesticides or other chemicals.<br>**Recommendations**: These units can provide safe drinking water reliably if carefully maintained. See Table 7 for details. |
| **Solid Carbon Block Filters**: Water is forced through the pores of a densely compacted carbon block to purify water of parasites (like giardia and cryptosporidium), bacteria, dangerous chemicals (like pesticides), heavy metals (like lead and mercury). This is **not to be confused with** granular **Activated Carbon** used in to remove the taste of chlorine, etc. Activated Carbon is not effective in removing contaminants like bacteria, parasites, viruses, etc., and can become a breading ground for bacteria. | **Pros**: Can reduce chlorine, taste and odor problems, and filters out a wide range of dangerous organisms and chemicals. They can serve the purpose of day-to-day water filtration as well as contingency use with the optional hand pump.<br>**Cons**: These units are relatively expensive.<br>**Recommendations**: See Table 7 for details. |

**Table 6. Pros and Cons of Common Methods for Water Purification (Part 3)**

| Purification Type/Description | Pros, Cons, and Recommendations |
|---|---|
| **Fiber (glass or polyethylene) with Carbon**: These filters can be effective at removing protozoa (like giardia) and bacteria, but not viruses. If contain iodinated resin, they can kill viruses, if there is sufficient contact time. They are commonly available through Sporting Good stores and provide immediate, potable water for hikers and campers. | **Pros**: They are relatively inexpensive up-front. They can reduce chlorine, taste and odor problems, and filter out most dangerous organisms.<br>**Cons**: These units do not remove dangerous viruses, unless they contain iodinated resin. One filter can typically only purify 100 gallons, but it could be less if the water is cloudy or if algae are sucked in.<br>**Recommendations**: See Table 7 for details. |
| **Silver**. Silver has been used for centuries as a purifier. Ionized silver is reportedly used by the US and Russian space programs to purify water. When settlers moved across the American West, it is reported that they would purify a container of water by putting a silver dollar in it overnight.[42] Colloidal Silver (suspended in a liquid solution) is reportedly an effective means for water purification. Colloidal silver is a non-toxic, natural antibiotic with no side effects. It disables the specific enzyme that all one-celled bacteria, fungi and viruses use for oxygen metabolism.[43]<br><br>**[Note: I have not been able to find an authoritative source for this information]** | **Pros:** It is reportedly effective. One silver coin is relatively inexpensive.<br>**Cons:** Colloidal Silver is relatively expensive. It does not remove any chemicals or organic/inorganic matter.<br>**Recommendations**: See Table 7 for details.<br><br>See note in left column. |
| **Aerobic Oxygen**. Reportedly destroys all harmful organisms, even Giardia. To purify a glass of water, juice, or milk, just add 5 drops. For large volumes of water, you would typically add 20 drops per gallon or one pint per 500 gallons. Aerobic Oxygen is reportedly a safe non-toxic stabilized liquid concentrate of electrolytes of oxygen. Travelers reportedly use Aerobic Oxygen in their drinking water particularly in foreign countries where water is suspect. Add 20 drops per gallon for long-term water storage.<br><br>**[Note: I have not been able to find an authoritative source for this information]** | **Pros:** Has a long shelf-life. Is reportedly very effective and has no ill health effects or bad taste.<br>**Cons:** Relatively expensive (~$15 to treat 55 – 110 gals.)<br><br>See note in left column. |

[42] See http://www.pangea.ca/~h2o/silver.html#footnotes
[43] See http://www.thecolonet.com/p_silver.html

**Table 7. Some Recommended Sources for Water Purification Systems (Part 1)**

| **Product / Type** (see Table 6 for tips/issues) | **Removes (effectively mitigates):** Bacteria | Protozoa | Chemicals | **Where to Buy/Cost** |
|---|---|---|---|---|
| 1. Liquid Regular *Clorox* bleach (with no fragrance) + an eye-dropper | Yes | Marginal (not totally effective) | No | Any grocery or general merchandise store (like Kmart, Wal-Mart, etc.) / A few $s will purify 1,000s gallons. |
| 2. *Potable Agua*. Iodine tablets. [Can buy with *PA+* to remove iodine taste] | Yes | Yes (if sufficient contact time) | No | Available at most Camping stores. A small bottle treats up to 12+ gallons for less than $10 with PA +. |
| 3. *British Berkefeld*. Silver impregnated ceramic filter with carbon drip filter in stainless steel housing. Certified for NSF standards 42 and 53. Self-sterilizes. | Yes | Yes | Yes. Reduces chlorine, pesticides, solvents, etc. | Available at TACDA at 800-425-5397 or at www.tacda.org. Filters up to 15,000 gallons. 12 gals/hour for $199, 24 gals/hour for $259 plus shipping. |
| 4. *Katadyn* Filters. Top quality ceramic filter units. *Pocket*, *Combi*, *Drip*, and *Siphon* models. The *Expedition* model is a great heavy duty, portable filter with a fast flow rate. | Yes | Yes | Yes. Reduces chlorine, pesticides, solvents, etc., with some models | Available at Black Mountain Stores at 800- 760-7942 or www.katadyn.net/index.html. Also at CFR at 719-962-3228. Models go from $100 to $1,143 depending on flow rate and filtration method. Filters typically can handle thousands of gallons. |
| 5. *Multi-Pure* Solid Carbon Block Filter Unit. These filters are used for home water filtration but can also be used in contingencies with the optional hand pump. | Yes | Yes | Yes | Call 1-800-622-9206 for more information. Certified for NSF standards 42 and 53. Typical price: $350+. Must use optional hand-pump if no water pressure. Filter good for 750 gallons. |
| 6. *Global Sun Oven* with thermometer. Can purify water through pasteurization or boiling. Temps up to 360+°F. Cooking times are slightly longer than conventional oven. The most popular sun oven in world - used in 126 countries. | Yes | Yes | No | Available at TACDA at 800-425-5397 or at www.tacda.org. Price is $205 plus shipping (for TACDA members). Operates from 10 AM to 2 PM in winter in most USA locations and 8 AM to 6 PM in summer, unless overcast day. Requires pot for boiling water in. Measures 19" x 19" x 11" when folded and weighs 21 lbs. |
| 7. *PUR* portable water filters are popular for camping and home water purification. They use a glass fiber/carbon core and some use iodinated resin. *PUR* filters do not clog easily and require less work to obtain water than most filters. *PUR* offers a unique home water pitcher and home water dispenser that filters both bacteria and protozoa and is NSF certified for standards 42 and 53. | Yes | Yes | Yes. Reduces chlorine, pesticides, solvents, etc. (for models that use the iodinated resin).<br><br>No for other models. | Available at most Camping or Sporting Goods stores. Water pitcher can be purchased at *Costco* (and presumably similar stores) for less than $35 for 80 gallons worth of filtered water. Their hiking and camping filters are rated to about 100 gallons and range from $60 - $130. Filters can also be purchased direct from: www.bestore.com/bestore/purifier.htm and www.ewalker.com/adgear/h2opur.htm |

**Table 7. Some Recommended Sources for Water Purification Systems (Part 2)**

| **Product / Type** (see Table 6 for tips/issues) | **Removes (effectively mitigates):** Bacteria | Protozoa | Chemicals | **Where to Buy/Cost** |
|---|---|---|---|---|
| 8. *Aerobic Oxygen.* An effective method for treating drinking water and for keeping water pure during long-term storage. It kills all anaerobic (disease causing) bacteria by oxygenating the water, while leaving good bacteria unharmed. | Yes | Yes | No | Can buy 2-oz. bottle that will treat 55 - 110 gallons of water and sells for $13.95 from Watertanks.com www.watertanks.com/aerob.html (call toll free at 877-426-8657 or 888-742-6275). Other sizes are available, as are discount prices. Other sources for aerobic oxygen are Walton Feed at 800-269-8563 or http://waltonfeed.com/ion.html that sells for $15. |
| 9. *Micropur*® water treatment products conserve and preserve water in a natural and non-polluting manner that is based on silver ions that do not require chemical additives; thus the water keeps its original fresh taste. At the same time it is preserved and remains bacteriologically pure for up to 6 months. | Yes | Yes | No | Black Mountain Stores at toll free (800) 760-7942 or www.katadyn.net/index.html.<br>- Micropur® Crystals (250 gal) $12.95<br>- Micropur® Crystals (2500 gal) $24.95<br>- Micropur® Crystals (12500 gal) $74.95<br>- -Micropur® Tablets (25 gal) $9.95<br>- Micropur® Liquid (75 gal) $6.95<br>- Micropur® Liquid (250 gal) $11.95 |

***Ω JCD***

... End of *The Year 2000 (Y2K) Challenge (Part 1)* ... this report will be continued in future editions of the *Journal of Civil Defense.*

**NOTE:** *The views expressed in this report are those of the author and are not intended to represent those of the Department of Defense or the US Government.*

An online version of this report is available for viewing at the TACDA website at www.tacda.org

# Investigating the Impact of the Year 2000 Problem[1]

## Summary of the Committee's Work in the 105th Congress
## February 24, 1999
*SENATE SPECIAL COMMITTEE ON THE YEAR 2000 TECHNOLOGY PROBLEM*

## EXECUTIVE SUMMARY

The Committee has found that the most frustrating aspect of addressing the Year 2000 (Y2K) problem is sorting fact from fiction. Reports from even the most reputable news sources fall prey to polarizing forces — either over emphasizing a handful of Y2K survivalists, or downplaying the event as a hoax designed to sell information technology equipment.

The Internet surges with rumors of massive Y2K test failures that turn out to be gross misstatements, while image-sensitive corporations downplay real Y2K problems. The good news is that talk of the death of civilization, to borrow from Mark Twain, has been greatly exaggerated. The bad news is that Committee research has concluded that the Y2K problem is very real and that Y2K risk management efforts must be increased to avert serious disruptions.

Y2K is about more than the failure of an individual's personal computer or an incorrect date in a spreadsheet. As one examines the multiple layers of systems and technologies that support our everyday lives, the potential Y2K problems increase exponentially. The interdependent nature of technology systems makes the severity of possible disruptions difficult to predict. Adding to the confusion, there are still very few overall Y2K technology compliance assessments of infrastructure or industry sectors. Consequently, the fundamental questions of risk and personal preparedness cannot be answered at this time.

On the positive side, Y2K awareness is growing. In the past year, both public and private institutions have doubled their efforts to find, evaluate, and address Y2K risk exposure. The Committee has seen a significant amount of progress since its inception. However, Senate hearings, interviews, and research have not produced convincing evidence that the Y2K problem is well in hand.

The biggest Y2K impact may occur internationally. While the U.S. should have started its Y2K preparations earlier, worldwide preparations generally lag even further behind.

### OVERALL OBSERVATIONS

**Many organizations critical to Americans' safety and well being are still not fully engaged in finding a solution.**

For example, over 90% of doctors' offices and

[1] See http://www.senate.gov/~y2k/reportcontents.html for the complete report. The report provides some excellent insights into the status of the US infrastructure's preparedness for Y2K.

50% of small- and medium-sized businesses have yet to address the problem. Larger firms have, in general, grasped how a Y2K failure could severely impact their businesses and are taking steps to remedy the problem. Smaller firms remain more focused on what they perceive as more immediate concerns, which in many cases do not include Y2K.

**Most affected industries and organizations started Y2K remediation too late.**

As a result, many organizations must exercise "triage"—focusing on what is critical to sustain the life of the enterprise as opposed to finding long-term solutions.

**Self-reporting has yielded unreliable assessments for most industry sectors. With few exceptions, disclosure of Y2K compliance is poor.**

Analogous to letting students grade their own tests, self-reporting offers data of varying reliability. Nonetheless, it has become the standard in both private industry and government. Industry surveys are currently the most widely utilized tool to measure compliance. Unfortunately, the results of many surveys have been kept from public and Special Committee view (see "Transportation" in this report). Despite an SEC rule requiring Y2K disclosure of public corporations, companies are reluctant to report poor compliance levels.

**Fear of litigation and loss of competitive advantage are the most commonly cited reasons for bare-bones disclosure.**

Although sharing Y2K data could save time in companies' remediation and contingency planning efforts, such cooperation has not been forthcoming. To encourage greater disclosure, the Committee spearheaded a bipartisan effort that passed the Year 2000 Information Readiness and Disclosure Act (S.2392) and introduced the CRASH Protection Act (S.151 8). The Year 2000 Information Readiness and Disclosure Act provided a basic level of protection for Y2K statements made in good faith. The CRASH Protection Act pressured the SEC to require more meaningful Y2K corporate disclosure to shareholders.

More legislation may be necessary to address Y2K litigation. Some liability cost projections are as high as $1 trillion. Serious doubts exist as to whether or not the present judicial system could handle a potentially monstrous wave of litigation.

The Committee plans to address certain key sectors in 1999 where there has been extreme reluctance to disclose Y2K compliance.

**National emergency and security planning for Y2K-related systems failures is just beginning.**

FEMA contingency plans are in draft form, but there is no national, strategic plan to assure that critical infrastructures will continue to function.

This is partially due to varying levels of state and local government preparedness. State and local governments represent the first line of defense in emergency situations, and emergency planning is difficult without their full involvement. A recent Labor Department report stated that several states are lagging in specific Y2K system repairs relating to federally funded programs.

**Leadership at the highest levels is lacking.**

A misconception pervades corporate boardrooms that Y2K is strictly a technical problem that does not warrant executive attention. Some government sectors lack clear directives and policies on Y2K.

## SECTOR ASSESSMENTS

Since its establishment in April 1998, the Special Committee has held nine hearings on seven critical economic sectors:

- Utilities
- Health care
- Telecommunications
- Transportation
- Financial institutions
- Government
- General business

The eighth sector, Litigation, will be addressed in early 1999.

The Committee plans to revisit each of the sectors in 1999, with emphasis on litigation and the addition of international concerns to the list of critical sectors. The Committee will assess the nation's progress toward Y2K compliance and pinpoint problem areas. The Committee will also continue to provide recommendations to Congress for legislative action.

## UTILITIES

**While some compliance efforts are behind, the utility industry as a whole is configured to handle interruptions, blackouts, and natural disasters. A prolonged, nationwide blackout is not likely to occur. However, local and regional outages remain a distinct possibility depending upon the overall preparedness of the individual electric utility serving a given area.**

The nation's electric power industry comprises 3,200 independent utilities. Overall remediation of the electric power industry is slow. According to NERC, only about 50% of the utilities had completed Y2K remediation as of December 1998. Failure of some parts of the electric industry's system is likely, but the Committee does not expect the integrity of the overall power grid to be compromised. Of greatest concern are approximately 1,000 small, rural electric utilities that may not have the resources to devote to Y2K compliance.

Compliance among oil and natural gas utilities is also progressing slowly. A survey by the Committee, while limited in scope, indicates a lack of contingency planning, overly optimistic assertions that compliance will be complete, and a lack of knowledge about suppliers' Y2K status.

## HEALTH CARE

**The health care industry lags significantly in its Y2K preparations compared to other sectors. Because of limited resources and lack of awareness, rural and inner city hospitals have particularly high Y2K risk exposure.**

Health care is the nation's single largest industry, generating $1.5 trillion annually. There are 6,000 hospitals, 800,000 doctors and 50,000 nursing homes, as well as hundreds of biomedical equipment manufacturers and suppliers of blood, drugs, linens and bandages—and health care insurers—that may be unprepared for the year 2000.

According to a report by the Gartner Group, 64% of hospitals—primarily smaller hospitals—have no plans to test their Y2K remediation efforts. In addition, 90% of physicians' offices are unaware of their Y2K exposure. Struggling compliance efforts by HCFA (the agency that oversees Medicare) and unaddressed concerns about medical devices are major roadblocks to the industry's Y2K readiness.

## TELECOMMUNICATIONS

**A massive industry-wide effort is underway**

**to assess the impact of Y2K on telecommunications. The initial interoperability testing indicates that the U.S. communications will transition without significant problems. Currently, more than 80% of public network systems have been tested and are considered compliant.**

The telecommunications industry has spent billions on Y2K fixes and should have 99% of access lines in compliance by the fall 1999. Currently, industry and government are working together to coordinate contingency plans in case there are failures. Industry in U.S. and overseas has established warning networks to alert each other of Y2K problems.

## TRANSPORTATION

**The transportation sector is the linchpin for just-in-time inventory management across most every sector, from health care supplies to food. The Y2K readiness of this sector is critical to our global economy. Planes will not fall out of the sky, but disruption of flights and global trade between some areas and countries may occur.**

On average, the nation's 670 domestic airports started Y2K compliance too late. The Federal Aviation Agency has made great strides in the past year, but remains at risk. The situation with international air traffic control and airports is much more severe. The maritime shipping industry has not moved aggressively toward compliance. Public transit could be seriously disrupted.

## FINANCE

**ATMs are expected to function correctly and banks should have adequate cash to meet consumer demand, based on a Federal Reserve estimate that each American household will withdraw an average of $500. The securities industry has responded well to its internal Y2K issues and has undertaken expansive testing. However, fund managers and brokers have only recently started to consider the implication of corporate Y2K vulnerability on investment decisions.**

The financial services sector ranks ahead of nearly all other industries in its remediation and testing efforts. Legislation in Congress and action by the Committee have led to legal requirements on broker-dealers and publicly traded companies to disclose compliance information.

Federal regulators have made considerable progress in tracking compliance among banks, thrifts and credit unions, of which 95% have received satisfactory government ratings.

## GOVERNMENT

**Several state and many local governments lag in Y2K remediation, raising the risk of service disruption. The federal government will spend in excess of $7.5 billion and will not be able to renovate, test, and implement all of its mission critical systems in time. However, wholesale failure of federal government services is not likely to occur.**

The Committee's work in this sector includes national emergency planning as well as federal, state, and local government preparedness. After a late start, FEMA is now engaged in national emergency planning in the event of major and minor Y2K disruptions.

State and local governments vary widely in their Y2K preparations. Several states are not prepared to deliver critical services such as benefit payments. Of greatest concern to the Committee is the ability of local communities to provide 911 and emergency services. The federal government also varies widely in its Y2K preparations. The Social

Security Administration started early and is prepared, while other agencies, like the Department of Defense, are lagging. To its credit, the federal government publicly displays its Y2K status through quarterly and monthly reports to the Office of Management and Budget.

## GENERAL BUSINESS

**In general, large companies have dealt well with the Y2K problem, due to greater resources. Very small businesses may survive using manual processes until Y2K problems are remediated. However, many small- and medium sized businesses are extremely unprepared for Y2K disruptions. One survey shows that more than 40% of 14 million small businesses do not plan to take any action.**

The heavily regulated insurance, investment services, and banking industries are furthest ahead in their efforts: health care, oil, education, agriculture, farming, food processing, and the construction industries are lagging behind. The cost to regain lost operational capability for any mission critical failure will range from $20,000 to $3.5 million, with an average of 3 to 15 days necessary to regain lost functions.

## LITIGATION

The prospect of litigation arising from Y2K-related failures has shadowed the Committee's work from the very beginning. Some estimates project litigation cost in excess of $1 trillion. The Committee plans to hold hearings and work closely with the Judiciary and Commerce Committees to make legislative proposals in this area.

## INTERNATIONAL

**Several U.S. trading partners are severely behind in their Y2K remediation efforts. For example, the Gartner Group estimates that Venezuela and Saudi Arabia (two of the largest U.S. oil importers) are 12 to 18 months behind the U.S. in their Y2K remediation efforts.**

The Committee is greatly concerned about the international Y2K picture. The U.S. is dependent on a healthy global economy. It is in the interest of the U.S. to encourage Y2K remediation worldwide.

* * * * *

The challenges posed by the Y2K problem are numerous and daunting. The Special Committee conducted extensive research and held numerous hearings in 1998, but still cannot conclusively determine how extensive the Y2K disruptions will be. The Committee has no data to suggest that the United States will experience nation-wide social or economic collapse, but the Committee believes that some disruptions will occur, and that in some cases Y2K disruptions may be significant. The international situation may be even more tumultuous.

There are reasonable steps individuals may take to prepare for the Year 2000. Consumers are urged to keep copies of financial statements and ask local banks what efforts are being made toward Y2K compliance. Individuals should research companies' compliance levels before making investment decisions. The Y2K problem has been likened to a winter storm, with the implication that similar preparation is appropriate. Americans should prepare for Y2K based on facts and reasonable predictions about the problem's effects on vital services.

# WHEAT—THE BASIC GRAIN

By James Talmage Stevens [1]

Wheat is referred to as the staff of life because it is the most widely grown and consumed grain in the world. Wheat is utilized in many forms by different cultures, but the form of wheat most widely used is flour, whether for pastas, breads or other baked goods. Flours are available from the minimally processed whole-wheat flours, such as graham and bread flour to the highly processed white flours, unbleached or bleached, such as bread, pastry, cake, all-purpose, self-rising, and semolina flour.

Perhaps less known are other types of wheat forms available for our use. Among them are the unprocessed forms of whole-grain wheat. These include whole or cracked kernels of the *wheat berries.* Slightly more processed forms include bulgur, couscous, wheat germ, wheat bran, rolled and flaked wheat (similar to oatmeal) and the wheat meals. The most recognized forms are the higher processed forms, such as farina, semolina and white flour.

With such a wide range of uses, wheat is considered by many experts to be one of the most basic food storage items. It is certainly easy to store and has high value in the daily diet. Wheat can be prepared easily in an extremely wide variety of dishes—from breakfast cereals to breads to main dishes to desserts. Wheat is also very nutritious, containing high amounts of protein, calcium, niacin, riboflavin and thiamin. When sprouted, vitamins A and C are also present in increased amounts.

As interest in wheat storage and in-home storage and utilization has increased, equipment for in-home processing and food technology for its use and enjoyment have kept pace with the demand. Commercial resources for producing, milling, storing, grinding and preparing wheat have increased at ever-lower costs. Grinders, grinding mills, storage containers, widespread delivery systems, and availability are working for the wheat devotée.

This chapter contains many helpful ideas for storing and preserving whole-wheat grains. The following chapters have recipes for utilizing wheat from whole kernel to white flour. Virtually every form of preparing wheat in-home is covered.

By the way, here is an early warning message—***don't try to start a whole-wheat diet all at once!*** You would suffer digestive problems an antacid won't resolve! The normal digestive system cannot adapt immediately to the extreme dietary change a diet of whole wheat would cause. Small children would probably have digestive and elimination problems when commencing a high-level wheat consumption diet. A diet with a few ounces per day of processed flour products is a far cry from a diet of *cracked whole-wheat cereal* at breakfast, *whole-wheat bread sandwiches* for lunch, then a *wheat sprout salad*, a *whole-wheat bulgur casserole*, some more *whole-wheat bread* and a *wheat-based dessert* at dinner! Living on *basic foods* is a lifestyle unto itself.

Wheat causes allergic reactions in some people, and a whole-wheat diet will be very difficult for them. Many persons, who at lower levels of wheat intake may not be aware of their allergy to wheat, may discover their latent sensitivity when they ingest more wheat more often.

If you aren't using whole-wheat food daily, start utilizing it at some meal soon. Get accustomed to whole-wheat foods by using some whole-wheat flour in white flour recipes the family already likes. Once

[1] Extracted from the book, *Making the Best of Basics, Family Preparedness Handbook*, by James T. Stevens. Used by permission of the author. The entire book may be purchased from TACDA at 1-800-425-5397 for $17.95.

you've cleared that hurdle, start on the next one. Eventually you'll be able to utilize whole-wheat flour exclusively, when flour is required in a recipe. Then, and only then, are you ready to use only your own wheat flour produced in-home, including all those delightful whole-wheat casseroles you'll create!

Let reason prevail—start now in your goal of utilizing wheat in every form. Break into the whole-wheat lifestyle with a gentle, guiding effort. Don't wait for a cataclysm—you'll have more than *one* serious problem with which to deal!

## BASIC STORAGE GUIDELINES

Many years ago, Bob Zabriskie outlined the value of wheat storage in his timely publication, *A Family Storage Plan.*[1] His storage plan suggested how much whole wheat to purchase and gave guidelines for storing wheat that are still valid today. Listed below are his suggested criteria for purchasing, treating, and preserving bulk whole wheat:

- **Variety**
- **Protein content**
- **Moisture content**
- **Quantity**
- **Containers**
- **Storage techniques**

### Purchasing Whole Wheat

> ***Note:***
>
> *When buying whole-wheat flour from the store, buy it only if it has been refrigerated. Be sure to keep it refrigerated until utilized.*

**Varieties to buy include Dark Hard Winter, Spring Wheat, Dark Turkey Red, and Montana White Wheat because they store best.** Grain should be cleaned for human consumption and free from all foreign matter possible. Buy *Grade #1* for food storage. Always buy the best grade(s) available—the quality of your results in cooking, baking and realizing the full health benefits whole wheat offers depends on your choice of grain!

**Protein content should be 13% or higher.** There are wheat varieties available to the consumer with as much as 18% protein.[2]

**Moisture content should not exceed 10% in the grain.** This will inhibit microbial infiltration and insect infestation.

**Quantity to buy varies according to age, weight, size, sex and appetite of each person.**

### Containers for Storing Whole Wheat

**Use crush-proof, waterproof and moisture-proof containers.** All food storage products must be protected to prevent infiltration, infestation, and contamination. The better the container fulfills these requirements, the better condition stored wheat will be when needed.

**Store wheat in round cans.** When storing wheat in square cans, allow several inches open space on all sides of the cans to allow air to circulate more freely.

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[1] *Family Storage Plan*, Bob R. Zabriskie, publ. Bookcraft Publishers, Inc., 1848 West 2300 South, Salt Lake City UT. His book is a compilation of suggestions for the preparation, preservation, and storage of foods.

[2] Wheat Montana Farms, P.O. Box 647, Three Forks MT 59752. (800) 535-2798. Growers of Montana White Wheat and Golden 86 Hard White Spring wheat with protein in excess of 18%.

**A round, 5-gallon metal bucket, enamel-coated interior, with an airtight lid and waterproof seal is the best option for storing bulk whole wheat.** They are generally available from restaurant suppliers, barrel, container, or used-container dealers. This type container will hold approximately 35 pounds of wheat, and is convenient for both transporting and long-term storage purposes. These containers will stack safely, allow better ventilation, protect the contents, and utilize less storage space.

**A 5-gallon polyethylene bucket with tight-fitting lid and waterproof seal is a good alternative to the metal can**—these are normally available at the same businesses as metal cans. Same caution as to container's previous contents applies.

**Always use a heavy-duty, food-grade, sealable, plastic liner in any container for bulk wheat.** With any container, a food-grade plastic liner is necessary to prevent infiltration of contaminants, infestation, and moisture.

**Properly processed, treated, pre-packed, and factory-sealed wheat can be purchased from reputable mills and food storage dealers.** Commercially sealed wheat usually requires neither turning nor aerating when properly stored.

***Caution:*** *Attention to previous contents of any used container is important. Make sure no chemicals, odorous food or non-food products were stored in food containers.*

## Basic Storage Techniques

There are a few critical things about bulk wheat storage we bring to your awareness. Properly stored wheat will store indefinitely. Improperly stored wheat will neither store for very long, due to spoilage nor have any food value left when used, even if it doesn't spoil.

### Temperature Range

**Temperature range for storing bulk wheat is 45°–65°F.** Edible and sproutable wheat was discovered in the pyramids after centuries of storage. Wheat will keep indefinitely when properly stored. However, since ideal storage conditions are difficult to maintain, always rotate stored wheat. Use older wheat first and replace it annually with new wheat at harvest times, when prices are generally lower.

### Moisture Protection

**Always store wheat in a dry environment.** Bulk wheat must be kept dry to prevent infestation and contamination. Moisture provides a growth environment for molds, bacteria, and a multitude of bugs.

**Wheat draws moisture, so take precautions to protect stored wheat from exposure to high humidity and high temperatures.** Use boards or wooden platforms under metal cans to prevent bottoms of cans from touching or being in direct contact with concrete, earth, or any moisture-conducting surface. The bulk wheat draws moisture, so must be isolated by the wood and air buffer to prevent spoiling.

### Ventilation

**Leave air space around stored wheat containers.** Ventilation is necessary because the ambient air provides a buffer zone for the stored wheat as it gains and loses heat.

**When storing wheat in square cans, allow several inches open space on all sides** of the cans to allow adequate ventilation. Wheat stored in square cans and stacked too closely together does not allow the heat generated to escape. The increased temperatures cause sweating inside the containers.

**Use boards or wooden platforms** under all storage containers, especially metal cans, to prevent bottoms from rusting.

### Light

Avoid storing wheat in bright light. Some light will discourage molds from growing in small containers.

## Treating Wheat for Storage

### Heating Method

The heating method has the advantage of killing all forms of animal life in the wheat. The disadvantage is that it will also kill the wheat when overheated or left in the oven too long!

**Basic heating method:** pour infested wheat in shallow baking pan to depth of $^1/_2$". Place in preheated 150°F oven for *only* 15–20 min. Wheat will scorch if it gets too hot for too long. Oven door may be left open to allow moisture and heat to escape.

### Organic Method

Diatomaceous earth is an organic method to eliminate the hungry little critters feeding freely on your storage supply. It will rid the container of all bug and critter life. This organic treatment is not harmful to man or animals. It's also very cheap and simple to use.

**Basic organic method:** for each 5 gal. container, put in $1^1/_4$ C. diatomaceous earth, shake vigorously or roll container until all the wheat grains are dusted. To use wheat after treatment, rinse grain before using, then blot dry with towel with massaging action to wipe off powder. Or use it with dust on it—it's treated with an organic compound!

## Local Area Guidance

Local County Extension Service agents will have additional information on the best storage techniques and details for your geographical area.

## What Not to Do with Storage Wheat

Here's a short list of things to avoid when storing bulk wheat—or when storing any food products:

- Do not pack wheat tightly into any storage space that is not optimal for storage.
- Do not store wheat directly on dirt or cement floors, as wheat draws moisture from these surfaces.
- Do not store wheat in a container which holds more than 2 bushels or 100 lb. Large containers are difficult to move and any infiltration, infestation, spoilage or exposure would contaminate the entire contents.
- Do not store wheat near:
  - hot or cold water pipes, heating ducts, or steam pipes
  - washing machine or clothes dryer (*vented or not*)
  - where laundry is hung to dry
- Do not store wheat in any of these locations:
  - in an unheated garage or non-insulated space
  - in a basement or underground space not completely dry
  - in any uninhabitable space
- Do not put salt in wheat when storing it.
- Do not use aluminum garbage cans for wheat storage since an airtight seal is generally impossible to achieve. Even with food-grade plastic liners, garbage cans are not designed for storing edible food.

## Grinding Wheat

If you store wheat in bulk, you certainly must have access to a wheat grinder. There are many models on the market, both hand-operated and electric models. The electric models are great, but quite expensive. It makes good sense to have a hand-operated, foot- or bicycle-powered model before purchasing an expensive electric model. On an occasional basis, many blender models may have adequate power to produce enough flour for a batch of bread. The more a wheat grinder is utilized, the better it grinds the wheat into flour—the stones literally grind themselves to a perfect fit. All motorized grinders normally ship with instructions, so be sure to follow the operating instructions of the manufacturer for best results.

> ***Note:***
>
> *Grind only enough wheat for use within 1 week. Natural whole-wheat flour has practically no food value remaining after 30 days at room temperature.*

**Storing ground wheat:** keep ground whole wheat and all types of fresh-ground or commercially-ground (store-bought) flours in the refrigerator or in an equivalently cool, dry place. Refrigeration at 40°F will extend shelf life of ground wheat by approximately 6 months.
***Ω JCD***

# Designing Digital Defenses

By Linda D. Kozaryn
American Forces Press Service

BRUSSELS, Belgium -- Defense experts are gearing up to face a new danger threatening America and its allies -- cyberattacks.

The advent of the computer-based Information Age has opened the door to unconventional attacks since almost every aspect of modern life has become increasingly dependent on computers. Telecommunications, government operations, banking and finance, transportation, air traffic control, water supply systems, medical, police, fire and rescue -- all are vulnerable to attack.

By the year 2000, experts predict 1 million networks will be connected to the Internet. About 350 million computers will have e-mail access. Nearly 20 trillion bits of data are now transmitted monthly, and this figure is doubling annually.

All it might take to disrupt the nation's power grids and other critical infrastructure are a home computer, a telephone line, digital dexterity and a double dose of moxie. Right now, computer hackers are poking and prodding, trying to gain unauthorized access to national and private systems.

Recently, for example, two computer-wise California teen-agers succeeded in breaching an unclassified Pentagon defense network. Security experts believe critical systems could well become the targets of more than inquisitive children.

Terrorists, criminals, disgruntled employees and even rogue states could launch much more serious cyberattacks. Rather than confront the United States or its allies on the battlefield, future foes may attack nations' infrastructures. DOD alone has about 2.1 million computers, 10,000 local area networks and more than 100 long-distance networks.

"We didn't let them take down the power system of the United States, **but they could have done it.**" Defense officials learned it **only requires modest know-how to seriously disrupt vital services** like power distribution and telecommunications ...

"There are no borders in cyberspace," Deputy Defense Secretary John Hamre declared at a NATO conference in Vienna in June. "It is absolutely imperative that we prepare now to protect these systems."

Last year, DoD conducted Eligible Receiver, an exercise to determine U.S. vulnerability to computer attacks, Hamre told about 250 NATO and Partnership for Peace members attending the 15th NATO Workshop.

"We selected a small group of employees -- 35 individuals," Hamre explained. "We gave them funds to buy computers from local stores. They were only allowed to use off-the-shelf software or software they could download from the Internet. They were given three months to find out if they could disrupt the infrastructure of the United States."

The results were startling, Hamre said. "We didn't let them take down the power system of the United States, but they could have done it." Defense officials learned it only requires modest know-how to seriously disrupt vital services like power distribution and telecommunications, he said.

"A small handful of capable computer specialists -- a capability well within the reach of even moderately developed countries – using off-the-shelf technology and equipment can now wage war against the largest country in the world," he said.

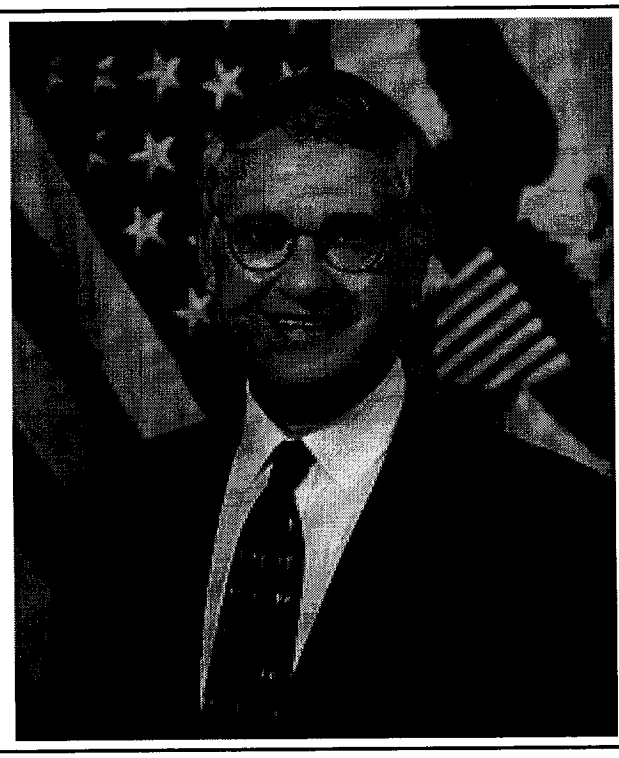
Hence, the United States is taking steps to protect its infrastructure. A presidential mandate calls for a plan to implement information assurance measures. It includes creating lead agencies to coordinate with private companies, and setting up a new national infrastructure protection center. The plan designates a coordinator for infrastructure protection on the National Security Council. Government officials are also setting up a national warning and analysis center and increasing funding for information assurance fivefold, Hamre said.

"This is a pressing problem because you can't solve it by yourself," Hamre said. "The Defense Department cannot solve this problem because we don't own the systems that are likely to be attacked. We have to develop partnerships with the private sector to get them to fix this problem."

Cooperation among NATO allies and partners is also vitally important, he said. "With this increasingly 'Interneted' world, we cannot accept vulnerabilities in our allies," he said. "The weakest link in the chain becomes the broken chain for us all." *Ω JCD*

**"A small handful of capable computer specialists -- a capability well within the reach of even moderately developed countries – using off-the-shelf technology and equipment can now wage war against the largest country in the world"**

*Deputy Defense Secretary John Hamre*



# Secretary of Defense Cohen's Announcement on National Missile Defense (NMD)

From a DoD News Briefing, Wednesday, January 20, 1999

Secretary Cohen: Good morning.

Last night President Clinton pointed out the growing threat to our security that is posed by the proliferation of weapons of mass destruction. Today I'm announcing that we are committing additional billions of dollars and taking other steps to protect our troops and the American people from the growing threat posed by weapons of mass destruction delivered by ballistic missiles.

In addition, I'm announcing today's decisions regarding how we'll decide to deploy a missile defense for America, how we'll address the Anti-Ballistic Missile Treaty, the ABM Treaty, and how we are restructuring some of our programs to enable us to deploy capable missile defenses as quickly as possible.

These decisions affect both our national missile defense program and the theater missile defense programs.

**"... the budget we are going to submit in February will increase NMD by $6.6 billion" – SecDef Cohen**

With regard to the national missile defense program to provide a limited defense for the 50 states against a long-range missile threat posed by rogue nations, we are making four critical decisions.

First, we're budgeting funds that would be necessary to pay for an NMD deployment.

The Department has long worked to ensure that the NMD development program was properly funded, but until now the DoD has not budgeted any funds to support a possible deployment of a limited NMD system. Since we intend to make a critical decision in June 2000 regarding deployment, the budget we are going to submit in February will increase NMD by $6.6 billion including the costs associated with the NMD deployment over the Future Years Defense Plan.

This includes $800 million provided by Congress in the fiscal year '99 supplemental appropriations bill, and nearly triples, to $10.5 billion, the amount we're budgeting for the national missile defense.

No deployment decision has been made at this time. That will be made in June of 2000.

Second, we are affirming that there is a threat, and the threat is growing, and that we expect it will soon pose a danger not only to our troops overseas but also to Americans here at home.

Last spring the commission that was chaired by former Secretary of Defense Donald Rumsfeld provided a sobering analysis of the nature of the threat and the limitations of our ability to predict how rapidly it will change.

Then on August 31st, North Korea launched a Taepo Dong 1 missile. That missile test demonstrated important aspects of intercontinental missile development including multiple stage separation, and unexpectedly included the use of a third stage. The Taepo Dong 1 test was another strong indicator that the United States in fact will face a rogue nation missile threat to our homeland against which we will have to defend the American people.

Our deployment readiness program has had two key criteria that has to be satisfied before we could make a decision to deploy a limited national missile defense system. There must be a threat to warrant the deployment; and our NMD development must have proceeded sufficiently so that we are technologically able to proceed.

What we are saying today is that we now expect the first criterion will soon be met, and technological readiness will be the primary remaining criterion.

The third step concerns the ABM Treaty which imposes strict limitations on national missile defense. And while our NMD program is being conducted consistent with the terms of the ABM Treaty to date, our deployment might require modifications to the treaty and the Administration is working to determine the nature and the scope of these modifications.
We will seek to amend the treaty if necessary, and we will work in good faith to do so. We have amended the treaty before and we see no reason why it cannot be amended again.

The ABM Treaty also provides, of course, for right of withdrawal with six months notice if a party concludes it's in its supreme national interests.

The limited NMD capability we're developing is focused primarily on countering rogue nation threats and will not be capable of countering Russia's nuclear deterrent. We've already begun environmental site surveys for potential basing sites in both Alaska and North Dakota, and we have briefed Russian officials on these activities and on our NMD program in general, and on today's announcement.

Fourth, to maximize the probability of programmatic success and be able to deploy a technologically capable system as quickly as possible, we will phase key decisions to occur after critical integrated flight tests. As a result, instead of projecting a deployment date of 2003 with exceedingly high risk, we are now projecting a deployment date of 2005 with a much more manageable risk. But if the testing goes flawlessly, we may be able to deploy sooner.

As you know, there's been concern expressed by independent analysts that we have been "rushing to failure", and given the reality of the threat, we cannot afford to fail. So the approach that we are presenting today is the optimal one to provide a capable NMD system as soon as possible. These four decisions reflect the steps that are required now to be able to implement our NMD program in a successful manner.
...

> " ... we are affirming that there is a threat, and the threat is growing, and that we expect it will soon pose a danger not only to our troops overseas but also to Americans here at home."
> **– SecDef Cohen**

These new initiatives are going to help us ensure that we'll meet existing and rapidly emerging ballistic missile threats as quickly and as effectively as possible in a manner that is integrated with our overall defense requirements.
...

Q: Mr. Secretary, on missile defense, I wonder if you'd give us your sense of your hopes and fears about it. Secretary McNamara made a very similar speech 32 years ago that you just went through, except he named China as the rogue nation, and he said that his biggest fear was that once we started a [fin] defense, it would (inaudible). What are your hopes and fears in that line?

Secondly, do you personally want to salvage as much as you can of the ABM Treaty? I mean Article 3 flatly says that each party undertakes not to develop a sea-based system. Or do you personally think the treaty has outlived its usefulness and we'd just as soon abandon it?

Secretary Cohen: With respect to Secretary McNamara having made a similar statement, I think at this time we have seen the proliferation of missile technology which does in fact pose a threat to the United States, and I mentioned the rogue nations. The former Soviet Union continues to have many missiles, which currently pose a threat, but we have had a very strong deterrent against the former Soviet Union and others.

What we're dealing with here is the question of those nations -- rogue nations could be North Korea, it could be others, who acquire a limited capability that could in fact pose a threat to the American people. We intend to develop, are prepared to develop a system that would give us that limited type of protection against either the rogue nation or the accidental, unauthorized type of launch.

We do not intend to have an NMD that could defend against Russia, for example. That's not something we seek to develop, but rather a limited system to provide for that kind of limited attack.

With respect to the ABM Treaty, I believe it's in our interest to maintain that. I think we need to modify it to allow for an NMD program that I've outlined, but the ABM Treaty I think is important to maintain the limitations on offensive missiles. To the extent that there is no ABM Treaty, then certainly Russia or other countries would feel free to develop as many offensive weapons as they wanted, which would then set in motion a comparable dynamic to offset that with more missiles here.

So I think the ABM Treaty is in our overall interest, but I believe it should be modified to allow for a deployment of an NMD system.

Q: How would you modify it, if you were to modify it? Since the treaty itself really bans defending the entire national territory. It only limits it to single sites. How would you go about modifying ...

Secretary Cohen: First of all, we have to determine whether or not we can in fact defend the entire 50 states from a single site. That's a determination that's not yet been made. But in the event that more is needed, multiple sites, we would have to amend it to accommodate that. We're looking at Alaska as a potential site that could give 50 state coverage with one site. The ABM Treaty could be amended, for example, to shift from the one site in North Dakota that was originally agreed to, to put that in Alaska.

It might require multiple sites.

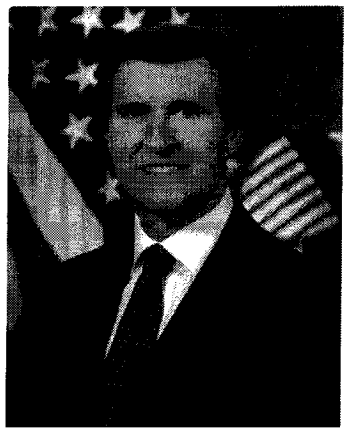
Those determinations have yet to be made, but what we are doing is we're exploring and will propose to explore with the Russians, modifications that would allow for a limited system.

Q: And if it couldn't be amended?

Secretary Cohen: Then we have the option of our national interest indicating we would simply pull out of the treaty.

***Ω JCD***

**"I think the ABM Treaty is in our overall interest, but I believe it should be modified to allow for a deployment of an NMD system."**
**– SecDef Cohen**



# *High Frontier's Response to Secretary Cohen's National Missile Defense Announcement*[1]

Released 20 January 1999. Call (703) 671-4111 for more information from *High Frontier*

## *Clinton Missile Defense Plan Flawed*

In a press conference today, Secretary of Defense William Cohen paid lip service to a notion High Frontier has been supporting since its founding in 1981: America is currently undefended against ballistic missiles and must be defended in order to provide for the common defense, as our Constitution mandates. Unfortunately, the proposal outlined today does not do nearly enough.

According to Reuters, Cohen announced plans to spend an additional $6.6 billion on missile defense over the next seven years. Secretary Cohen stated "We are affirming that there is a growing threat [of ballistic missile proliferation] and that it will pose a danger not only to our troops overseas but also to Americans here at home." Referring to the recent Rumsfeld Commission report, which stated countries wishing to deploy ballistic missiles to threaten the U.S. could do so within 5 years, he went on to say that "While our NMD development program is being conducted consistent with the terms of the ABM Treaty, our deployment may require modifications to the treaty and the administration is working to determine the nature and scope of these modifications." Notably, the Secretary made no commitment actually to deploy needed defenses.

Admitting a problem exists is the first step to recovery. But, the Administration's proposed actions do not move quickly enough to defend America.

The Rumsfeld Commission report, praised by the Secretary today, concludes that a nation wishing to acquire the capability to strike the U.S. with ballistic missiles could do so within five years—before 2004. There is ***no way*** the Administration's NMD program will build defenses by then.

But there is a way to build a defense by then, if the Administration would do the right thing. According to High Frontier's Chairman, Ambassador Henry F. Cooper, "If the Navy Theater Wide theater missile defense program were funded at a rate which allowed deployment as soon as possible, we could have a system up and running in 36-40 months for a cost of less than $3 billion. If unconstrained by the ABM Treaty, NTW could provide a beginning of defense for the American homeland, as well." Cooper concluded, "Unfortunately, the current proposal does not go far enough, and risks giving false reassurances to the public at large. In actuality, it does nothing to change our vulnerability. Had the Clinton Administration continued the program I left in place in 1993 at the end of my tenure as the Strategic Defense Initiative Director, we would have a workable Navy Theater Wide defense today."

As for modifying the ABM Treaty, in the past, the Clinton Administration's working definition of "modify" as it applies to the ABM Treaty has been as a synonym for "strengthen." Over the past two years, the White House has actually made the Treaty *more restrictive* of America's right to defend itself from ballistic missile attack. In September 1997, Secretary of State Madeleine Albright negotiated to expand the scope of the Treaty to include Ukraine, Belarus, Kazakhstan and, of course, Russia as parties to the Treaty. Also, Secretary Albright agreed to a further "defining" of Theater Missile Defenses (TMD) to make us even more vulnerable by placing artificial limits on the capabilities of missile defense systems.

High Frontier chairman Cooper responded "In 1992, Russian President Boris Yeltsin, in a speech to the U.N., proposed a joint U.S.-Russian program to develop a cooperative global protection system. At the end of the Bush Administration, we were well on our way to achieving this goal. When the Clinton Administration took office, however, all former positions were taken off the table and the ABM Treaty was declared a 'sacred text' and 'the cornerstone of strategic stability.' The ABM Treaty and its philosophical base, the ideology of Mutual Assured Destruction, or 'MAD,' which supports vulnerability to attack, must be subjected to the ultimate amendment. Our negotiations with the Russians should be to end the ABM Treaty, and urgently to build commonsense missile defense systems to the full extent technology allows. The time for such half-measures has long passed; we must now act to protect ourselves." ***Ω JCD***

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# U.S.- RUSSIAN MUTAL SPACE DEFENSES

By Nancy D. Greene

By 1980, according to the annual report of the U.S. Defense Department, the Soviet Union had achieved "Strategic Superiority". The means used to determine strategic superiority were various mathematical and other indices, called "Strategic Measures of Effectiveness" or "MOEs", for short. What was striking about the 1980 report was that *no defensive weapons or systems were factored into the equation.* There were over one hundred MOEs used to assess the U.S. – Soviet strategic balance, but *none* of them referred to active or passive defenses.

In the mid-1960s, the United States had unilaterally determined that building defenses against ballistic missiles would not be "cost effective at the margin". It would be "cheaper, faster, and easier "to build offsetting, offensive weapon systems than to build and deploy defenses against them. And so, the strategic policy called "Mutually Assured Destruction" was born. Then Secretary of Defense, Robert S. McNamara, using a study by Air Force Col. Glenn Kent, formulated the new national strategy based on offensive systems, which deliberately exposed the population(s) to nuclear attack, presumably as a gesture of good faith, to illustrate that no first strike would be attempted, or it would mean national suicide. The American public, of course, had no real knowledge or say in the matter.

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The Soviet Union, on the other hand, was not bound by such a strategy, and wisely pursued a balanced offensive-defensive military structure, more aggressive on the offensive side to overtake the United States, but not ignoring various types of strategic defenses: radar defenses, ballistic missile defenses, civil defenses, air defenses, and research on other types of defenses. Under the SALT arms control agreements, both sides were allowed to protect two sites with terminal defenses. By the late 1960s, however, the idea of missile defense in the United States was so under attack, that both U.S. sites allowed under the treaty were dismantled or never completed. Little or no thought at the time was given to the possibility of accidental, unauthorized, or miscalculated nuclear attack. Deterrence was the name of the game, but that could only deter a *deliberate* attack. Neither was there much serious thought given (by Americans) to future rampant nuclear proliferation, where many countries or rogue states might develop a long-range delivery capability for weapons of mass destruction (WMD), or a time when the U.S. could be attacked without knowing the identity of the attacker, or that a deceptive attack could be initiated by a third country to deceive either or both the two major superpowers, the Soviet Union and the United States. That seemed too far off in the future. Some strategic analysts in the 1950s had assumed rapid nuclear proliferation would occur, but most were lulled into complacency when the first 25 years passed with still only six known nuclear powers, the Soviet Union, United States, England, France, China and, later, India. The Cold War was a delicate balance of terror, but as far as nuclear proliferation was concerned, many analysts assumed the next 25 years would resemble the last. They were wrong.

Many American systems analysts, who compared the "apples" and "oranges" of the U.S.-Soviet strategic balance, were quantifiable mathematicians, who required "quantifiable" numbers. Because the United States had not built any active or passive defenses against ballistic missiles, effectively, the quantifiable number was *ZERO.* But how exactly do you quantify zero? And since the Soviet Union had built a considerable number of active and passive defenses against ballistic missiles, both overtly and covertly, the real equation was *negative* zero. And how do you quantify the *negative value* of zero? The answer

is, you don't. So the mathematicians simply forgot about it. As a result, until the early 1980s, the American defense establishment never factored in *any* strategic measures of effectiveness for either active or passive defenses in calculating the strategic balance between the United States and the Soviet Union.

By 1972, the anti-defense lobby was so powerful in the United States, and the official policy of Mutually Assured Destruction (MAD), so accepted by the defense establishment and the general public, that a new arms-control treaty, called the ABM (Anti-Ballistic Missile) Treaty was negotiated and signed by the United States and the Soviet Union, which would limit defenses against ballistic missiles and prevent such defenses from being deployed in space. The Soviet motivation for signing the treaty was probably less than candid, since they showed little inclination for following either the spirit or letter of the agreement, as deceptions, such as the secret installation at Semipalatinsk, later came to light.

It was not until the late '70s that some American analysts realized that MAD was terribly flawed. By then, however, the policy was firmly established in the structure, and bureaucratic inertia took care of the rest. The "cost-effectiveness at the margin" argument had never been analyzed in terms of *strategy*. The "margin" was assumed to be a dollar-to- dollar comparison of offensive versus defensive weapon systems, determining that strategic defenses were too expensive to deploy. Not considered at the time, was "The Preferred Defense Option", which posited that only 10% of defenses to 100% of offenses would be required to *deter* attack, and was based on the logical assumption that a nuclear attacker would require a 90-95% confidence level in the success of the attack, but the defender would require only a minimum of ten percent of defenses to defeat that level of confidence (of deliberate attack), especially if deception were employed in deployment of the defenses. Of course, the defender might want "insurance" of another ten or twenty percent of strategic {counterforce} defenses to deter a much larger offensive force structure. Even if offensive weapon systems were less than half the dollar cost of defensive systems, the "margin" created by this strategy would render defenses more "cost effective" than an offense- only force structure, and much less risky. But to this day, no one, apparently, has done any real "margin" studies. In the meantime, however, we remain completely vulnerable to even one errant missile, one that could easily start an accidental nuclear war.

So, now we get to present-day difficulties. Nuclear proliferation is accelerating at a dizzying pace. While the former Soviet Union and the United States are trying to disarm offensive ballistic missile systems, the rest of the world seems to seek them. This can especially be said of traditional combatants such as India and Pakistan, but even more worrisome, of the rogue states of the Middle East, and aggressive countries such as North Korea. The prestige of ballistic missiles itself creates the motivation to possess them. If arms control treaties had not prevented the development and deployment of ballistic missile defenses, the currency of ballistic missiles would not be so valuable. Even a very imperfect missile defense would serve to reduce the unchallenged value of ballistic missiles. It is the *perception* that counts the most. And it is well past the time we should have taken to deploy missile defenses. Precious years have been wasted. Real arms control should not have been based on mutual vulnerability, as in MAD, but on mutual *invulnerability*, or MASS – Mutual Assured Security and Survival.

Fortunately, if we adopt such a new global defense strategy, we find that orbital mechanics and geo-politics work very well together. The next article will describe how Russia and the United States can both benefit from a mutual space defense pact that will be able to defend each against ballistic missile attack from potential enemies as well as from each other. ***Ω JCD***

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*Nancy D. Greene, former Editor and Publisher of HUMINT, The Human Intelligence Network Report, on geo-political strategy, and Vice President of TACDA, was one of the original analysts whose work in the 1970s led to the Strategic Defense Initiative in the 1980s.*

# ABOVE GROUND SHELTERS

By Marcel M. Barbier, Ph.D.

In this article, we have focussed on shelters against nuclear fall-out made of concrete that could be built anywhere in the country by any contractor having experience with steel reinforced concrete.

A first step is to decide to build the shelter above ground. This gets rid of excavation work, and of all ground water infiltration problems.

**A first step is to decide to build the shelter above ground. This gets rid of excavation work, and of all ground water infiltration problems.**

To be above ground, the walls must be thick. As a guideline, the book "Effects of Nuclear Weapons" by S. Glasstone and R. P. Dolan (pub. by US DOD and ERDA, 1977) indicate for 12 inches of concrete a dose transmission factor between 0.001 and 0.03, i.e. the radiation is attenuated by a factor between 1000 and 33, depending on the geometry. A direct calculation of the attenuation of the 500 keV line (positron annihilation) gives a factor of about 300. We will choose 14 inches as our typical wall thickness.

The next step is to organize this concrete in the most convenient, and/or economical way around a living space where people can stay.

One way of doing this is the cubic box, of World War II fame, consisting of vertical walls at right angles and a flat roof. Builders have forms for this kind of work and are accustomed to it. Fig. 1 shows the plan and endview of such a shelter. The door is a normal door (wood or steel) as it does not have to resist a blast overpressure[1]. An interior wall prevents gamma radiation traversing this door from

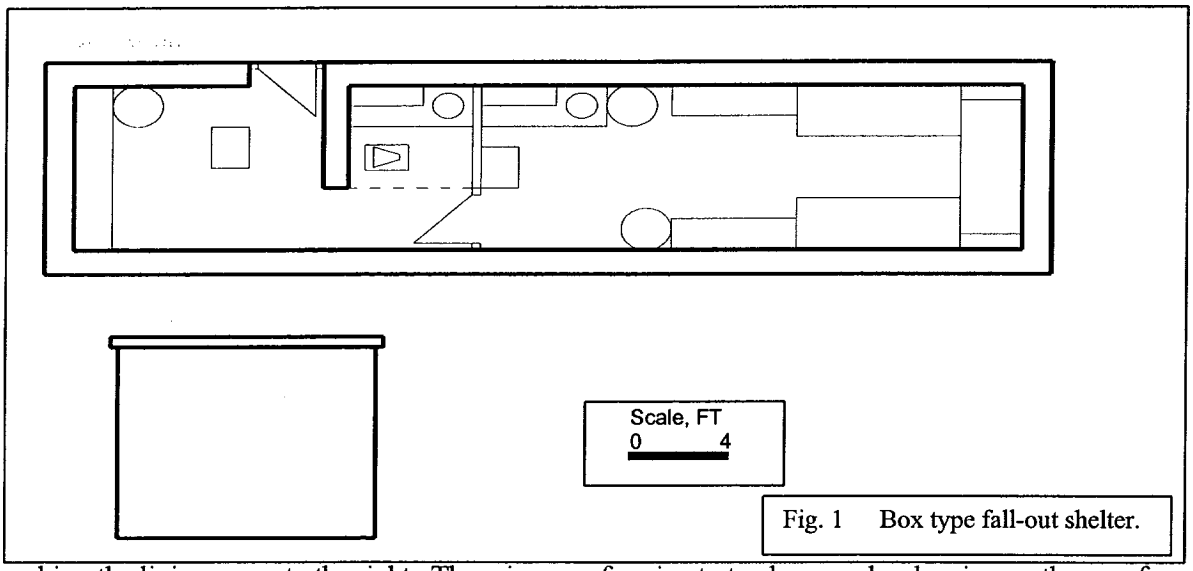


Fig. 1 Box type fall-out shelter.

reaching the living space to the right. There is room for nine to twelve people, sleeping on three or four triple bunks. There are also tables, shelves, cabinets, and a room with a chemical (recreational vehicle type) toilet and a table with sink for washing. One may be able to operate a normal toilet and sink, if one has a well, a septic field and electrical power from the motor-generator set. To the left of the door in this particular shelter is a space for a motor-generator set and storage. The motor must have an air intake and an exhaust of its own. There may be air intakes and exhausts in the living space, and in the motor-generator room, connected to blowers. There were hand-cranked blowers available in the past, but manufacture has stopped, due to lack of demand. It would start again if there is a sudden

[1] TACDA Note: If the shelter is to be used for other purposes, like a tornado or hurricane shelter, then a strong steel door would be preferable.

emergency, creating the need. There are electrical blowers available that can be used if one has electrical power. Or else one can ventilate the shelter by simply opening the door for some time (the door should be located downwind from the prevailing wind direction). One should not suck air in when the fall-out is falling. One can use a roughing filter followed by a high efficiency particle filter. Chemical filters, are only needed if one fears troops using combat gas, or huge fires in the neighborhood. In that case it is better to shut oneself in (button oneself up) and not take outside air in until the fires have abated. The box type shelter can be made smaller than shown in Fig. 1, especially if one does not have a motor-generator.

Another way of enclosing a living space is by using a dome type shell. It takes less concrete and reinforcement bars, as one has cut all the corners. The construction goes as follows.

After having poured the floor slab (with dowels at the periphery sticking out), one erects a skeleton of rebars giving the dome its shape. One then stretches and ties two layers of hexagonal wire-mesh on top. One then applies a thin layer of concrete on the wire-mesh from the inside with the trowel, another person holding a float on the other side against which the concrete is pressed, so that there are no voids behind the mesh wires. This is done in horizontal strips about 2'6" high each, which one lets dry before starting the next. The resulting product is called "ferrocement". One consolidates on both sides and makes sure to cover all the rebars and cure properly. Then one can gun one foot of concrete (in two six inches passes) on the outside. Later one can also, if one wishes, have three inches of polyurethane foam gunned on the outside for insulation and sprayed with a varnish against the weather.

There is an alternate method of building domes. It is to use an airform (balloon) of canvas, which one bolts to the periphery of the floor slab once poured. One inflates the balloon to the desired shape with a blower and builds a two-door system to go in and out without loosing air pressure inside. One then blows 2 or 3 inches of polyurethane foam on the inside of the balloon. This dries in a few minutes. One then sticks hooks into the polyurethane and attaches the rebars to them. Then one guns concrete to cover the rebars and lets it dry. When this thin shell is strong enough, one guns one foot of concrete inside (in two passes of 6") to have the thickness required for radiation protection. Canvas airforms made to specified dimensions can be obtained from Monolithic Constructors Inc., 1 Dome Park Place, P.O.B. 479, Italy, Texas 76651-0479,
Phone: 972-483-7454, Fax: 972-483-6662.

Fig. 2 shows a small dome shelter. The ceiling at the apex inside is only 7'6" above floor. The door is only about 5 feet high, still enough to roll somebody on a wheel chair in. Suppliers of steel doors can cut them to the desired height. This shelter will sleep six people and has no motor-generator set.

Fig. 3 shows a larger version of the above, with bunks for nine adults and space near the door for a motor-generator set. The door in this one is normal. In all these shelters the doors should feature windows to let daylight in.

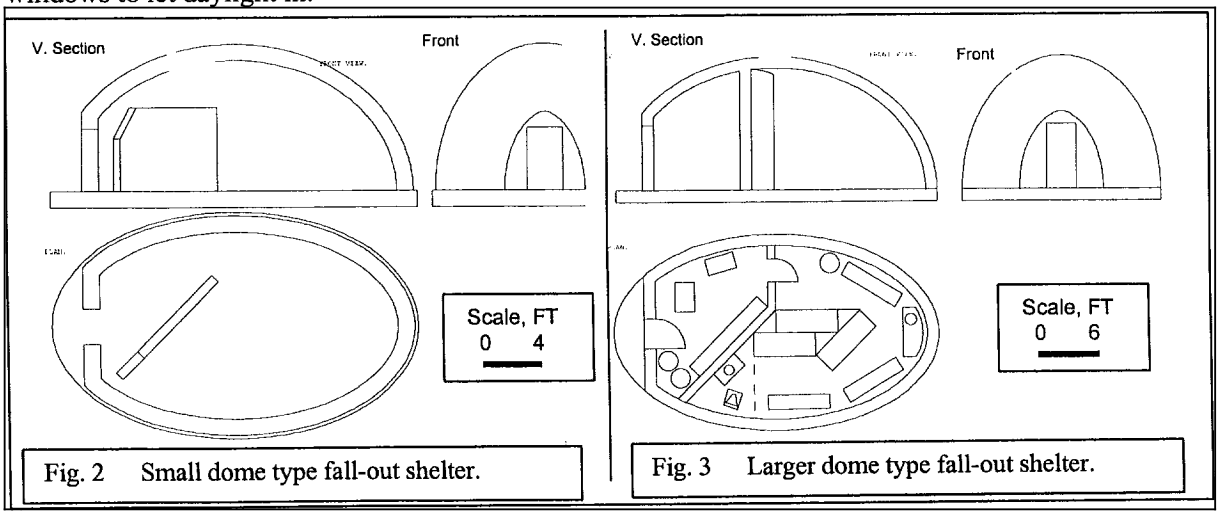


Fig. 2 Small dome type fall-out shelter.

Fig. 3 Larger dome type fall-out shelter.

If one wants really larger floor spaces for many persons, one has to go over to the ring shaped vaulted gallery (closed on itself). In this geometry the vaulted dome area is 1.57 times the floor space, while it is about 2 times the floor space in a regular dome as before. A layout of such a ring with bunks for 35 people (two bunks out of three are double instead of triple, so that they can be turned into sofas when not used as beds) is shown in Fig. 4. It features additionally a motor-generator set in a utility room, a shower and toilets, a kitchen with bar, a decontamination area and a storage room.

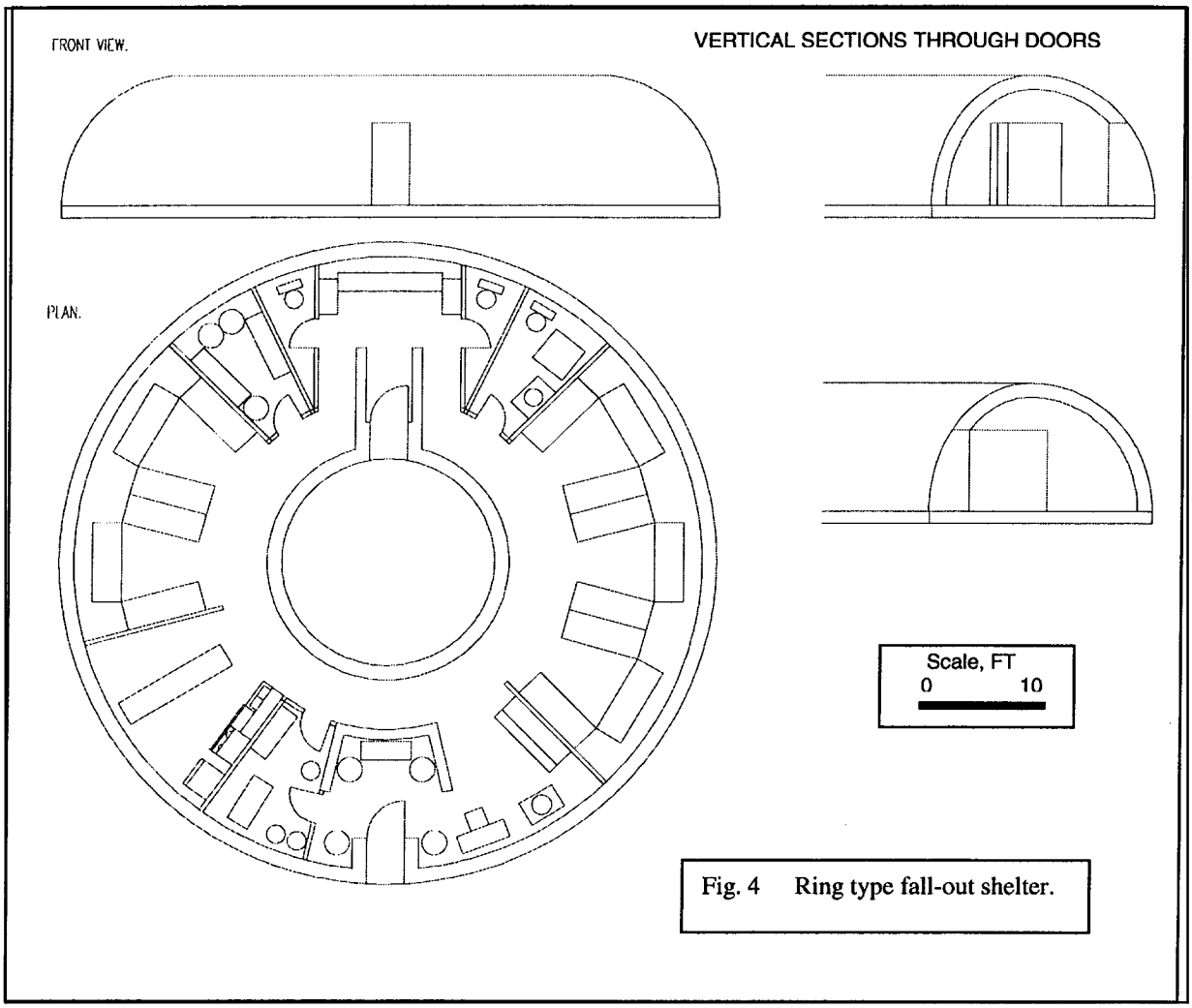


Fig. 4 Ring type fall-out shelter.

Using the dome shape it is even possible to build a regular house that is fall-out protected. One such model is shown in Fig. 5. The idea is to have windows and doors only on one side. In the middle of the house a 6'8" high wall 14" thick would shield the rest of the house, including bedrooms, kitchen, bathrooms from radiation coming through the doors and windows. In fall-out times, one would retreat behind the wall, not using the dining and living areas. The house shown in Fig. 5 was designed to be covered with over 2 feet of earth. If one increases the shell thickness from 6" to 14", one can avoid covering the house with earth and does not need the porch in the shape of a collar holding the earth around and above the front wall.

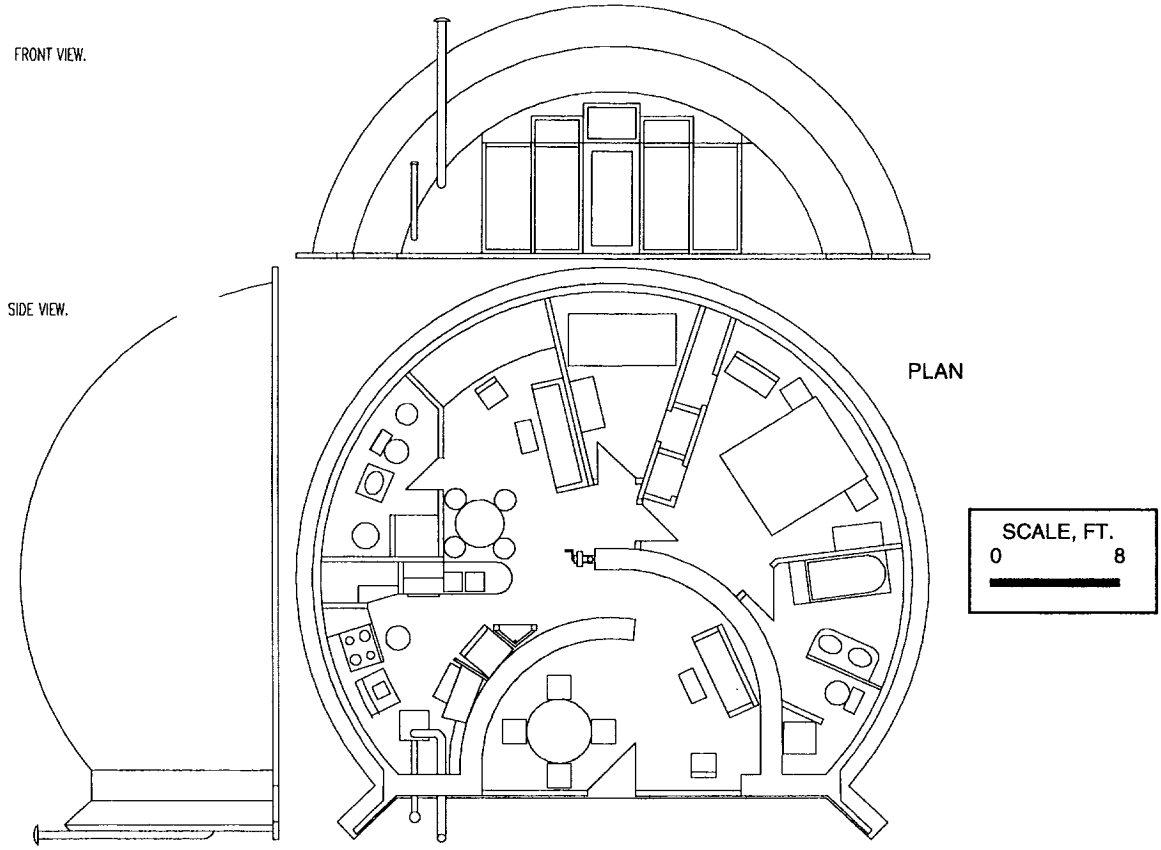


Fig. 5 Fall-out sheltered house.

In conclusion, it is hoped that these designs will bring simplification and savings in the construction of fall-out shelters. These buildings can be used in peacetime for storage of goods, food, tools, garden and other equipment. Blueprints, a list of rebars, and instructions for building will be available through TACDA for a fee in the not too distant future. ***Ω JCD***

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# The Defense Threat Reduction Agency

From DOD Fact Sheet (see www.dtra.mil for more information)

**The Defense Threat Reduction Agency (DTRA) is charged with reducing the present threat to the United States and its allies from weapons of mass destruction (WMD)**

The Defense Threat Reduction Agency (DTRA) is charged with reducing the present threat to the United States and its allies from weapons of mass destruction (WMD) and preventing future threats. DTRA is creating the intellectual infrastructure for a new approach to deter and counter the worldwide proliferation of WMD.

The Agency supports the U.S.'s nuclear deterrent capability; reduces the threat from nuclear, chemical, biological, other special and conventional weapons; and counters threats posed by WMD. DTRA provides operational and analytical support for nuclear stockpile stewardship duties and technical support for nuclear weapons in Department of Defense (DoD) custody. The Agency focuses DoD efforts to prepare for and respond to chemical or biological attacks on U.S. or friendly forces, including overseeing the development and implementation of special weapons technologies. These technologies provide U.S. military commanders options for effective targeting against underground or hardened structures and enhanced capabilities to assess battle damage. The Agency implements on-site arms control inspection, escort and monitoring activities, supports arms control confidence building activities and develops treaty verification monitoring technologies.

DTRA reviews licenses for the export of U.S. technologies that could be used to support the production and delivery of WMD or conventional weapons to ensure that the transfers are consistent with U.S. national security interests. It implements the Cooperative Threat Reduction program, which assists former Soviet Union countries in reducing their WMD infrastructure and provides verifiable safeguards against WMD proliferation. DTRA conducts force protection vulnerability assessments designed to protect military and civilian personnel and their families from terrorist acts. The Agency leads DoD efforts to support operational forces and develop field systems to counter WMD proliferation.

The Secretary of Defense's November 1997 Defense Reform Initiative directed DTRA be created to strengthen and improve WMD threat reduction through the merger of several defense organizations. On Oct. 1, 1998, elements of the Office of the Secretary of Defense staff, the Defense Technology Security Administration, the Defense Special Weapons Agency and the On-Site Inspection Agency consolidated to form DTRA. The Agency is authorized 2,088 military and civilian personnel and has a fiscal year 1999 budget of $1.8 billion.

DTRA is located at Dulles International Airport in the Washington, D.C., area. The Agency operates field offices in Alexandria and Arlington, Va.; Albuquerque, N.M.; Magna, Utah; and San Francisco, Calif. Overseas locations include Johnston Atoll, Pacific Ocean; Frankfurt, Germany; Minsk, Belarus; Almaty, Kazakhstan; Moscow and Votkinsk, Russia; Kiev, Ukraine; and Yokota, Japan.

The Director reports to the Under Secretary of Defense for Acquisition and Technology. The Director's advisors include senior officials from the Department of Energy, Department of State and Federal Bureau of Investigation. The Threat Reduction Advisory Committee of defense and security experts identifies threats and solutions for current and emerging WMD challenges. It advises and assists the Under Secretary of Defense for Acquisition and Technology and other senior Office of the Secretary of Defense officials. The Secretary of Defense has designated DTRA as a combat support agency.

The Defense Threat Reduction Agency's Personal and Special Staff and Business Management offices perform key support functions for the Director and the Agency. The six directorates—On-Site Inspection, Chem-Bio Defense, Cooperative Threat Reduction, Technology Security, Nuclear Support and Operations, Counterproliferation Support and Operations—carry out DTRA's critical mission elements. ***Ω JCD***

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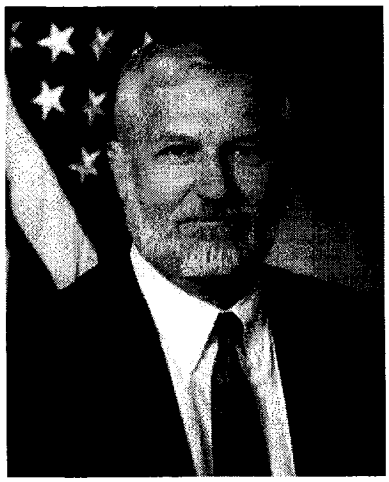
Dr. Jay Davis
Director, Defense Threat
Reduction Agency



# U.S. Government Responds To CBW Threat

**By Dr. Jane Orient [1]**

Having identified 120 cities as the first-line potential targets for terrorist weapons of mass destruction, the U.S. federal government has dispatched a team of experts to "train the trainers." During the week of October 5, Tucson was the scene of various 8-hour programs, including the "Domestic Preparedness, Technician-Hospital Provider" course held at Tucson Medical Center. Three Tucson physicians and a few dozen emergency responders and hospital staff members attended.

A spiral-bound book and CD-ROM containing bullet-point summaries were provided to use in local training sessions. An information line is available from 9 a.m. to 6 p.m. Monday through Friday, federal holidays excluded, at (800) 368-6498. An Internet address was given (www.nbc-prepare.org) with the caveat that it might be off-line because of many hits from China and other suspect nations. Indeed, the URL was unavailable when DDP tried it. An Internet search on "domestic preparedness" turned up 500 sites. The majority of the first ten were also unavailable, including the one with the summary "domestic preparedness for biological terrorism is nil; massive public health effort needed." A number of government reports can be obtained, and a portion of the Federal Emergency Management Association's reference library was accessible, such as a site with information regarding the effects of chemical agents and decontamination procedures (http://www.fema.gov/rris/reflib2.htm).

The National Defense Authorization Act for 1997 includes Title XIV: Defense Against Weapons of Mass Destruction (WMD), Subtitle A: Domestic Preparedness. A plan to provide immediate response capability by the year 2000 is in progress. In the meantime, the Department of Defense does have a program for loaning chemical and biological defense equipment to civilian agencies. However, "personal protective equipment such as the mask or protective suit, if adapted for civilian use, would require National Institute for Occupational Safety and Health or National Fire Protection Association approval." Commercial protective equipment is in use at many locations. A testing program for such equipment was to begin in the last quarter of fiscal year 1997.

Biological agents of greatest threat to military personnel, according to the U.S. Army Medical Research Institute of Infectious Disease (USAMRIID) include the following: *bacterial* (anthrax, plague, tularemia, Q fever); *viruses* (smallpox, Venezuelan equine encephalitis, viral hemorrhagic fever); and *toxins* (botulinum toxin, staphylococcal enterotoxin B, ricin, and tricothecene mycotoxins).

Anthrax spores are easily disseminated in an aerosol. If 110 pounds of anthrax spores were sprayed along a 1.5 mile tract upwind from a city with population 500,000, about 24,000 persons would die. Iraq has tested this agent in various delivery systems, including rockets, aerial bombs, and spray tanks in aircraft. Inhaled anthrax causes a mediastinitis with sudden onset after an incubation period of one to six days and death in 24 to 36 hours. About half the patients also develop a hemorrhagic meningitis. Infection can also occur through the skin or gastrointestinal tract. Inhalational anthrax is not transmitted person to person, but the cutaneous form may be.

Treatment of severe mediastinitis is usually futile, but consists of intravenous ciprofloxacin (400 mg q 8 to 12 h) or doxycycline (100 mg IV q 12 h for 4 wks). Vaccine should be started simultaneously. (An FDA-licensed vaccine said to be available from the Michigan Dept. of Health.) For exposure, oral prophylaxis should begin immediately with ciprofloxacin (500 mg p.o. for 4 weeks) or doxycycline (100 mg p.o. q 12 hr for 4 weeks), until 3 doses of vaccine have been received. For children, penicillin or amoxicillin (20 to 40 mg/kg/day in divided doses tid to qid), although a genetically engineered strain might be resistant to penicillin.

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 [Note: TACDA does not necessarily endorse all of the views and recommendations presented in this article].

Doxycycline is reasonably inexpensive and also effective in plague, tularemia, and Q fever, unless resistant strains are used.

Smallpox virus is said to be Russia's number one biologic weapon, and some Russian missiles may be carrying warheads loaded with it. Nearly the entire U.S. population is currently susceptible. The military discontinued vaccinating troops in 1983. In the past, smallpox had a 20 to 40% mortality rate in unvaccinated persons. Its contagiousness is one of its advantages as a BW agent.

There is no licensed antiviral against smallpox. The World Health Organization warehouses 20 million doses of vaccine. "It's kind of old, but we think it will work," stated course instructors. "They were going to get rid of it, but I think that's off now." Instructors were unable to answer the question of whether vaccine could be obtained to administer to hospital personnel at the present time. (Vaccine was formerly used to treat *Herpes simplex* by periodically boosting interferon levels, but has long been unavailable for such purposes.)

Russia has also allegedly weaponized the Ebola virus, the Marburg virus, or other viruses causing hemorrhagic fever, and may even have a genetically engineered combination virus called Ebolapox.

Noninfectious biological agents include botulinum toxin, ricin, and staphylococcal enterotoxin B. Such agents are up to 1,000 times more potent than standard chemical agents but may be more difficult to deploy as they are not volatile and generally not absorbed through the skin.

The U.S. military is testing an experimental Biological Integrated Detection System, which can be mounted on a vehicle and used to test air samples for biologic agents. There is also a Short-Range and Long-Range Standoff Detection System that uses lasers to detect aerosol clouds. The manual states that "the best way to minimize or prevent injury is to have a detection device available to the first responders at the scene to quickly identify the causative [biologic] agent." However, this technology "is not commercially available." Chemical detectors are also limited. Clinical observation is critical for both types of attack.

Clearly, in a CBW attack, local response teams, enhanced awareness, and self-protection by the population would be critical. Unless the nature of an incident is recognized and adequate protective gear is used, first responders are at grave risk of becoming casualties themselves.

The possibility of a nuclear incident is also recognized by the government. A presentation was given by one of four health physicists on constant call for the REACTS team, which has the ability to call on about 100 more. This instructor was apparently unaware that state and local authorities have no emergency radiation monitoring equipment. "Get them back," was his advice about the Geiger counters returned to FEMA. In the meantime, hospital nuclear medicine or radiation oncology departments would be the only resource for expertise and monitoring instruments.

The Domestic Preparedness kit has simplified, basic information on signs and symptoms caused by various radiation, chemical, or biologic exposures, along with an outline of suggested antidotes and antibiotics: your hospital should have a number of copies. However, it is evident that the federal government at the present time has no adequate stockpile of equipment or supplies for response and no obvious method of anticipating an attack before casualties arrive at the emergency room. The degree of denial as to the seriousness of the threat is the emphasis on controlling the media, abiding by OSHA regulations, and preventing lawsuits.

Members of the Pima County Medical Society who attended the training sessions have been asked to prepare shorter presentations for other physicians in Tucson. Plans are under development. ***Ω JCD***

**June 5-6: The 17th annual meeting of the Doctors for Disaster Preparedness** will be held in Seattle at the Marriott Hotel, Sea-Tac Airport. An optional tour of Boeing or a nuclear submarine base may be available on June 4 or June 7. Call 800-643-5479 for reservations at Seattle Marriott $84 (mention DDP to obtain rate). $95 for the meeting (includes two luncheons and a banquet), plus $20 each for the Boeing tour. To reserve a spot, call 520-325-2680 or write DDP, 2509 N. Campbell, Box 272, Tucson, AZ 85719.

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Dr Jane Orient has published the *Doctors for Disaster Preparedness Newsletter* for years and can be contacted at: DDP, 2509 N. Campbell Ave., Box 272, Tucson, AS 85719, (520) 325-2680. Past issues of the DDP Newsletter can be viewed at: http://www.oism.org/cdp/index.html

# Hondurans get tons of help

by Spc. Jeremy Ausburn

SOTO CANO AIR BASE, Honduras, (Army News Service, Jan. 24, 1999) -- Almost 30 million pounds of supplies and equipment for the Hurricane Mitch relief effort have moved on and off the flight line here since the beginning of November.

Joint Task Force-Bravo has delivered 3.31 million pounds of food, 140,800 pounds of medical supplies, and 1.15 million pounds of items such as tarps, diapers, clothes and other non-food items.

The cargo that has been delivered, however, is only part of what JTF-Bravo has accomplished since Hurricane Mitch devastated Honduras and other Central American countries. The task force has also helped through medical readiness and training exercises, road clearing, water delivery and bridge construction.

The medical element has gone throughout Honduras, treating more than 18,000 people. These treatments include prescriptions, immunizations, dental work, obstetrics/gynecology, eyesight treatments, and minor surgeries. The medics also support a local orphanage that has been overwhelmed by children whose parents were killed during the chaos of Hurricane Mitch.

"We are trying to do all that we can," said Army 1st Lt. David Roberts, medical liaison officer to the local hospital in Comayagua. "It feels good to be able to help these people."

Another heavy hitter on the JTF-Bravo team has been the engineers. Between the Army, Navy Seabees, and the Marine Corps, JTF-Bravo's team of engineers has rebuilt the infrastructure of Honduras. The engineers have cleared many of the roads washed out by the hurricane's flooding. These roads were crucial supply routes that allowed more food and supplies to get to the villages that needed them.

The engineers have also been busy replacing many of the bridges that were severely damaged during the storm. The bridges at Rio Hondo, San Juan de Flores and Ojo de Agua connected many towns that previously could only receive supplies by air and could not deliver their crops to the market in the capital of Tegucigalpa.

"The bridges and roads have revived the livelihoods of the people who live here. We have given them the chance to get back to a life that is closer to the life they had before the hurricane," said Master Chief Billy Johnson, U.S. Naval Mobile Construction Battalion Seven command master chief.

Water delivery has also been an important mission that has been spearheaded by the Army Forces Headquarters and Support Company. More than 430,000 gallons of clean, drinkable water have been delivered to villages all over Honduras. This was accomplished by tankers delivering water and by purifying water on the spot using Reverse Osmosis Water Purification Units.

Much of the accomplishments of JTF-Bravo would not have been possible without the support of the aviation units here. Company D, 228th Aviation Regiment (UH-60 Black Hawk) and Companies B and C, 159th Aviation Regiment (CH-47 Chinook) have transported nearly 3,000 relief personnel and have flown nearly 500 relief support missions since Nov. 1.

"There has never been a more joint task force than this Joint Task Force-Bravo. The way all four services have come together to support their Honduran neighbors in a time of desperate need is truly commendable," said Col. Charles H. Jacoby, JTF-Bravo commander. "More than 2,000 soldiers, sailors, airmen and Marines have become part of our ranks and have come together as a winning team. I couldn't be more proud of my troops."

*(Editor's note: Ausburn is with the 49th Public Affairs Detachment (Airborne) stationed at Fort Bragg, N.C.)*

Villagers from Casamacoa, Honduras, carry relief supplies away from a U.S. Army CH-47 Chinook helicopter. The helicopter, from the 159th Aviation Regiment, 18th Aviation Brigade, Fort Bragg, N.C., carried 11,000 pounds of food and clothing to the village. Over 1,800 U.S. service members helped to rush food, shelter, pure water and medical aid to the thousands of central Americans made homeless by Hurricane Mitch. DoD photo by Tech. Sgt. Thomas Cook, U.S. Air Force.

TACDA Note: There is still a continuing need for assistance to those in Central America who are homeless or who are now orphaned. Roughly 24,000 people have died and millions were left homeless as a result of this devastating storm and subsequent flooding. There are hundreds to thousands of new homeless children on the streets of cities in Central America as a result of Hurricane Mitch.
If you'd like to help, here are a few charities to consider:

| | |
|---|---|
| Verbo Christian Ministries<br>http://www.verbo.org/site/index.htm | Children International<br>2000 E. Red Bridge Rd, Kansas City, Mo. 54131, Phone: 816-942-2000 |
| Food for the Hungry<br>7729 E. Greenway Rd., Scottsdale, AZ 85260<br>1-800-2HUNGER | Comite Sanpedrano del Nino (San Pedro Committee for the Child)<br>Apdo. Postal 1800, San Pedro Sula, Honduras<br>Phone: 011-504-557-7256 |
| World Vision 1-888-511-6565 | World Relief 1-800-535-5433 |

# THE WHITE HOUSE
## Office of the Press Secretary

For Immediate Release January 22, 1999

## Keeping America Secure for the 21st Century: President Clinton's Initiative on Biological and Chemical Weapons Preparedness

President Clinton has made defending the United States against chemical and biological weapons a top national security priority. The possibility that outlaw nations and terrorist groups will seek to use these weapons represents one of the greatest threats to American security in the 21st century. The Administration has sought to defend against these threats through diplomatic and military means abroad and through increased preparedness at home. In his Fiscal Year 2000 budget -- which includes $10 billion to defend against terrorism and weapons of mass destruction -- President Clinton will propose major increases in funding to strengthen America's defenses against the threat of biological and chemical weapons.

Vaccine Research and Development -- The Department of Health and Human Services will receive an additional $43.4 million for research and development to defend against biological weapons -- almost a 150%increase. The bulk of it -- $30 million -- will go to research on new vaccines, including vaccines for smallpox and anthrax for eventual use in the national medical stockpile. The Food and Drug Administration will receive $13.4 million for enhanced regulatory review of vaccines and therapeutics. In addition, the National Institutes of Health will receive $24 million for research on diagnostics, vaccines, antimicrobials and genomic research.

Public Health Surveillance -- President Clinton will propose that funding for improvements in the public health surveillance system and public health infrastructure increase by 22% to $86 million. This will translate into increased lab capacity, strengthened epidemological capabilities for state and local health departments and more resources for communications and information technology. The Center for Disease Control will create a network of regional labs to provide rapid analysis and identification of select biological agents.

Metropolitan Medical Response Systems -- President Clinton will propose increasing funding by almost 400% to more than $16 million for Metropolitan Medical Response Systems. These local emergency medical teams will respond to a biological or chemical weapons emergency. Twenty-five new such teams will be funded.

President Clinton's new initiatives build upon a record of accomplishment in confronting the dangers of emerging threats at home and abroad.

Beginning in fiscal 1997, the Administration began funding a five-year effort to equip and train first responders in the 120 largest metropolitan areas in the nation.

Last year, the President proposed and Congress approved of more than $300 million in additional funds for weapons of mass destruction preparedness. Among the initiatives begun were the renovation of the public health surveillance system so medical personnel can detect a biological weapons release early and save lives. This appropriation also went to establish the first ever civilian medical stockpile, which

will contain necessary medication to treat those exposed to biological or chemical weapons. Funding levels for the medical stockpile will be maintained in the President's FY2000 budget.

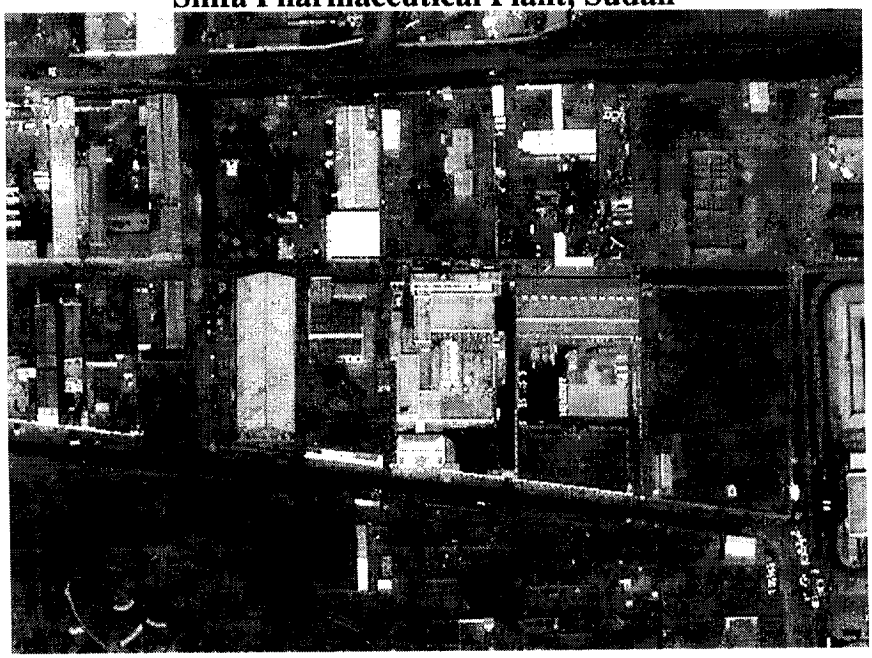
The United States led international efforts to ratify the Chemical Weapons Convention, which we signed in 1997, and American diplomats are currently working to strengthen the Biological Weapons Convention.

The Clinton Administration has also pursued cooperative programs and activities aimed at reducing the threat of proliferation of biological weapons expertise with nations of the former Soviet Union, spending $30 million in these areas during the last five years. The President's budget proposal seeks more than $150 million to expand these efforts over the next five years.

Through military action against production facilities for weapons of mass destruction in Iraq and Sudan, the United States has acted to degrade and eliminate the ability of these two nations to build weapons of mass destruction and supply them to terrorists.

*Secretary of Defense William S. Cohen (left) listens as Gen. Henry H. Shelton (right), U.S. Army, chairman, Joint Chiefs of Staff, briefs reporters in the Pentagon on the U.S. military strike on a chemical weapons plant in Sudan and terrorist training camps in Afghanistan on Aug. 20, 1998. DoD photo by Helene C. Stikkel.*

**Shifa Pharmaceutical Plant, Sudan**



# THE WHITE HOUSE
## Office of the Press Secretary

For Immediate Release January 22, 1999

## REMARKS BY THE PRESIDENT ON KEEPING AMERICA SECURE FOR THE 21ST CENTURY

National Academy of Sciences Washington

THE PRESIDENT: Thank you very much. Jamie, Dr. Lederberg, I'd like to thank you for your service in this and so many other ways. I would like to thank Sandy Berger for many things, including indulging my nagging on this subject for the better part of six years now.

I was so relieved that Dr. Lederberg not very long ago -- well, last year -- brought a distinguished panel of experts together to discuss this bioterrorism threat, because I then had experts to cite on my concern and nobody thought I was just reading too many novels late at night. (Laughter.)

Madame Attorney General, Secretary Shalala, Secretary Richardson, Director Witt, Deputy Secretary Hamre, Commandant of the Coast Guard and our other military leaders who are here, Mr. Clarke, ladies and gentlemen. I'm delighted to be here to discuss this subject. With some trepidation, Sandy Berger noted that Dr. Lederberg won a Nobel Prize at 33, and I was governor -- you can infer from that that I was not very good at chemistry and biology. (Laughter.)

But any democracy is imbued with the responsibility of ordinary citizens who do not have extraordinary expertise to meet the challenges of each new age. And that is what we are all trying to do. Our country has always met the challenges of those who would do us harm. At the heart of our national defense I have always believed is our attempt to live by our values -- democracy, freedom, equal opportunity. We are working hard to fulfill these values at home. And we are working with nations around the world to advance them, to build a new era of interdependence where nations work together -- not simply for peace and security, but also for better schools and health care, broader prosperity, a cleaner environment and a greater involvement by citizens everywhere in shaping their own future.

In the struggle to defend our people and values and to advance them wherever possible, we confront threats both old and new -- open borders and revolutions in technology have spread the message and the gifts of freedom but have also given new opportunities to freedom's enemies. Scientific advances have opened the possibility of longer, better lives. They have also given the enemies of freedom new opportunities.

Last August, at Andrews Air Force Base, I grieved with the families of the brave Americans who lost their lives at our embassy in Kenya. They were in Africa to promote the values America shares with friends of freedom everywhere -- and for that they were murdered by terrorists. So, too, were men and women in Oklahoma City, at the World Trade Center, Khobar Towers, on Pan Am 103.

The United States has mounted an aggressive response to terrorism -- tightening security for our diplomats, our troops, our air travelers, improving our ability to track terrorist activity, enhancing cooperation with other countries, strengthening sanctions on nations that support terrorists.

Since 1993, we have tripled funding for FBI anti-terrorist efforts. Our agents and prosecutors, with excellent support from our intelligence agencies, have done extraordinary work in tracking down perpetrators of terrorist acts and bringing them to justice. And as our air strikes against Afghanistan -- or against the terrorist camps in Afghanistan -- last summer showed, we are prepared to use military force against terrorists who harm our citizens. But all of you know the fight against terrorism is far from over. And now, terrorists seek new tools of destruction.

Last May, at the Naval Academy commencement, I said terrorist and outlaw states are extending the world's fields of battle, from physical space to cyberspace, from our earth's vast bodies of water to the complex workings of our own human bodies. The enemies of peace realize they cannot defeat us with traditional military means. So they are working on two new forms of assault, which you've heard about today: cyber attacks on our critical computer systems, and attacks with weapons of mass destruction -- chemical, biological, potentially even nuclear weapons. We must be ready -- ready if our adversaries try to use computers to disable power grids, banking, communications and transportation networks, police, fire and health services -- or military assets.

More and more, these critical systems are driven by, and linked together with, computers, making them more vulnerable to disruption. Last spring, we saw the enormous impact of a single failed electronic link, when a satellite malfunctioned -- disabled pagers, ATMs, credit card systems and television networks all around the world. And we already are seeing the first wave of deliberate cyber attacks -- hackers break into government and business computers, stealing and destroying information, raiding bank accounts, running up credit card charges, extorting money by threats to unleash computer viruses.

The potential for harm is clear. Earlier this month, an ice storm in this area crippled power systems, plunging whole communities into darkness and disrupting daily lives. We have to be ready for adversaries to launch attacks that could paralyze utilities and services across entire regions. We must be ready if adversaries seek to attack with weapons of mass destruction, as well. Armed with these weapons, which can be compact and inexpensive, a small band of terrorists could inflict tremendous harm.

Four years ago, though, the world received a wake-up call when a group unleashed a deadly chemical weapon, nerve gas, in the Tokyo subway. We have to be ready for the possibility that such a group will obtain biological weapons. We have to be ready to detect and address a biological attack promptly, before the disease spreads. If we prepare to defend against these emerging threats we will show terrorists that assaults on America will accomplish nothing but their own downfall.

Let me say first what we have done so far to meet this challenge. We've been working to create and strengthen the agreement to keep nations from acquiring weapons of mass destruction, because this can help keep these weapons away from terrorists, as well. We're working to ensure the effective implementation of the Chemical Weapons Convention; to obtain an accord that will strengthen compliance with the biological weapons convention; to end production of nuclear weapons material. We must ratify the Comprehensive Test Ban Treaty to end nuclear tests once and for all.

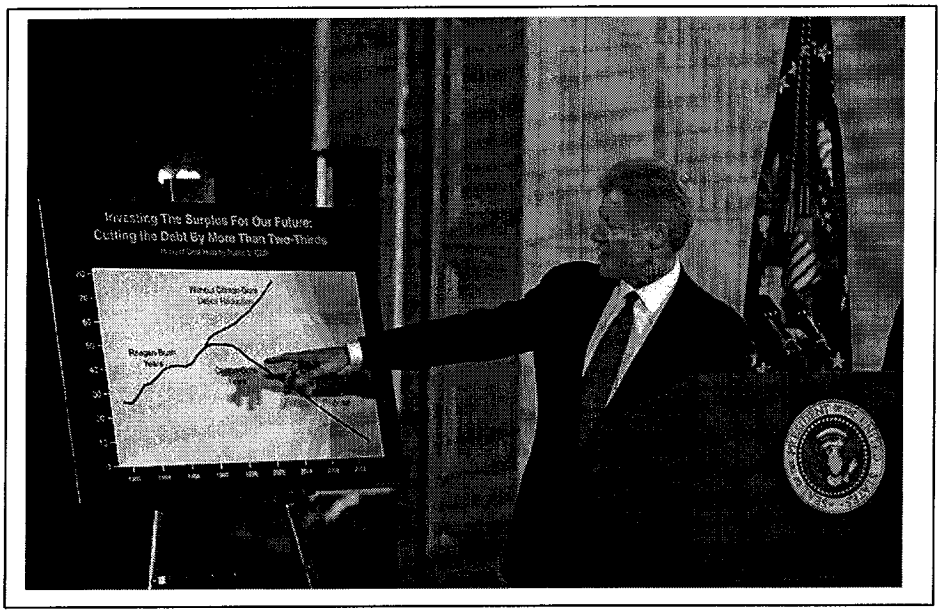
As I proposed Tuesday in the State of the Union Address, we should substantially increase our efforts to help Russia and other former Soviet nations prevent weapons material and knowledge from falling into the hands of terrorists and outlaw states. In no small measure we should do this by continuing to expand our cooperative work with the thousands of Russian scientists who can be used to advance the causes of world peace and health and well-being, but who if they are not paid, remain a fertile field for the designs of terrorists.

But we cannot rely solely on our efforts to keep weapons from spreading. We have to be ready to act if they do spread. Last year, I obtained from Congress a 39 percent budget increase for chemical and biological weapons preparedness. This is helping to accelerate our ongoing effort to train and equip fire, police and public health personnel all across our country to deal with chemical and biological emergencies. It is helping us to ready armed forces and National Guard units in every region to meet this challenge; and to improve our capacity to detect an outbreak of disease and save lives; to create the first ever civilian stockpile of medicines to treat people exposed to biological and chemical hazards; to increase research and development on new medicines and vaccines to deal with new threats.

Our commitment to give local communities the necessary tools already goes beyond paper and plans. For example, parked just outside this building is a newly designed truck we have provided to the Arlington, Virginia, Fire Department. It can rapidly assist and prevent harm to people exposed to chemical and biological dangers.

But our commitment on the cyber front has been strong, as well. We've created special offices within the FBI and the Commerce Department to protect critical systems against cyber attack. We're building partnerships with the private sector to find and reduce vulnerabilities; to improve warning systems; to rapidly recover if attacks occur. We have an outstanding public servant in Richard Clarke, who is coordinating all these efforts across our government.

Today, I want to announce the new initiatives we will take, to take us to the next level in preparing for these emerging threats. In my budget, I will ask Congress for $10 billion to address terrorism and terrorist-emerging tools. This will include nearly $1.4 billion to protect citizens against chemical and biological terror -- more than double what we spent on such programs only two years ago.




We will speed and broaden our efforts, creating new local emergency medical teams, employing in the field portable detection units the size of a shoe box to rapidly identify hazards; tying regional laboratories together for prompt analysis of biological threats. We will greatly accelerate research and development, centered in the Department of Health and Human Services, for new vaccines, medicines and diagnostic tools.

I should say here that I know everybody in this crowd understands this, but everyone in America must understand this: the government has got to fund this. There is no market for the kinds of things we need to develop; and if we are successful, there never will be a market for them. But we have got to do our best to develop them. These cutting-edge efforts will address not only the threat of weapons of mass

destruction, but also the equally serious danger of emerging infectious diseases. So we will benefit even if we are successful in avoiding these attacks.

The budget proposal will also include $1.46 billion to protect critical systems from cyber and other attacks. That's 40 percent more than we were spending two years ago. Among other things, it will help to fund four new initiatives. First, an intensive research effort to detect intruders trying to break into critical computer systems. Second, crime -- excuse me -- detection networks, first for our Defense Department, and later for other key agencies so when one critical computer system is invaded, others will be alerted instantly. And we will urge the private sector to create similar structures.

Third, the creation of information centers in the private sector so that our industries can work together and with government to address cyber threats. Finally, we'll ask for funding to bolster the government's ranks of highly skilled computer experts -- people capable of preventing and responding to computer crises.

To implement this proposal, the Cyber Corps program, we will encourage federal agencies to train and retrain computer specialists, as well as recruiting gifted young people out of college.

In all our battles, we will be aggressive. At the same time I want you to know that we will remain committed to uphold privacy rights and other constitutional protections, as well as the proprietary rights of American businesses. It is essential that we do not undermine liberty in the name of liberty. We can prevail over terrorism by drawing on the very best in our free society -- the skill and courage of our troops, the genius of our scientists and engineers, the strength of our factory workers, the determination and talents of our public servants, the vision of leaders in every vital sector.

I have tried as hard as I can to create the right frame of mind in America for dealing with this. For too long the problem has been that not enough has been done to recognize the threat and deal with it. And we in government, frankly, weren't as well organized as we should have been for too long. I do not want the pendulum to swing the other way now, and for people to believe that every incident they read about in a novel or every incident they see in a thrilling movie is about to happen to them within the next 24 hours.

What we are seeing here, as any military person in the audience can tell you, is nothing more than a repetition of weapons systems that goes back to the beginning of time. An offensive weapons system is developed, and it takes time to develop the defense. And then another offensive weapon is developed that overcomes that defense, and then another defense is built up -- as surely as castles and moats held off people with spears and bows and arrows and riding horses, and the catapult was developed to overcome the castle and the moat.

But because of the speed with which change is occurring in our society -- in computing technology, and particularly in the biological sciences -- we have got to do everything we can to make sure that we close the gap between offense and defense to nothing, if possible. That is the challenge here.

We are doing everything we can, in ways that I can and in ways that I cannot discuss, to try to stop people who would misuse chemical and biological capacity from getting that capacity. This is not a cause for panic -- it is a cause for serious, deliberate, disciplined, long-term concern. And I am absolutely convinced that if we maintain our clear purpose and our strength of will, we will prevail here. And thanks to so many of you in this audience, and your colleagues throughout the United States, and like-minded people throughout the world, we have better than a good chance of success. But we must be deliberate, and we must be aggressive. Thank you very much. (Applause.)

# FEMA Updates

## EL Niño: Gone But Not Forgotten

### One Year Later, Recovery Efforts Continue in California

San Francisco, February 9, 1999 -- A year has passed since the weather phenomenon called El Niño became a household name. In 1998, it was a topic on everyone's lips - a wet scourge that was blamed for sundry ills, often in jest.

For thousands of Californians, however, El Niño was no laughing matter. It became a major event in their lives, unforgettable in its destructive series of storms, floods and landslides.

On February 9, 1998, President Bill Clinton declared a disaster in California, responding to a request by then-Governor Pete Wilson. By March, 40 counties had been designated disaster areas. Residents, business owners and local governments in those counties became eligible for, and received, various kinds of assistance.

One year later, El Niños is gone but not forgotten.

Statewide, El Niño resulted in at least 17 deaths and 29 major injuries. It caused more than 700 million dollars' worth of damage to public and private property. Approximately 75,000 individuals, households and business owners registered for several kinds of disaster assistance from the federal and state governments.

"We remain committed to working closely with our local and state partners in the El Niño recovery," said Michael Lowder, federal coordinating officer for the Federal Emergency Management Agency (FEMA). "Meanwhile, we urge everyone to take actions that will lessen the risk of future floods and other types of disasters."

As severe as it was, the toll might have been much greater, but California heeded warnings and got ready for bad weather.

"Last year's experience proves that disaster preparedness and mitigation work," said Lowder. "Damages were far less in 1998 than what our state suffered from the 1995 or the 1997 storms. In large part, this was because protective measures were taken in advance, starting at the local level."

"Californians' mitigation efforts in the past four years have been quite effective in minimizing losses," added Lowder.

"We also urge people to get flood insurance," Lowder said. "It's a crucial part of protecting yourself and your property."

El Niño damage and assistance costs are summarized in the attached page.

DAMAGE COSTS - 1998 El Niño Storms (CALIFORNIA)

Estimated losses, as of [month/year]

- Agriculture $532 million
- Highways and roads $223 million
- Insured losses (primarily homes and automobiles) $160 million

- Total $915 million

Estimated federal/state assistance, as of [month/year]

- U.S. Small Business Administration disaster loans $87.4 million
- Public Assistance (infrastructure) $169.7 million
- Temporary Housing Assistance grants $28.4 million
- Hazard Mitigation grants $31.7 million
- Individual and Family grants $7.6 million

- Total $324.8 million

## FEMA Updates Continued: Arkansas Disaster Update

... The severe weather that began across the southeast Jan. 21 to 22, produced a new one-day record number of tornadoes in Arkansas. The National Weather Service (NWS) recorded 38 tornadoes on Jan. 21, surpassing Texas' previous record of 20 set in 1991. The system also produced large hail, heavy downpours and high winds. Local officials confirm seven storm-related fatalities, four in White County, one in North Little Rock and two in Little Rock. They also report 46 injuries, of which 31 occurred in White County. Hardest hit counties were Clay, Independence, Saline, St. Francis and White. Other affected counties include Clark, Craighead, Faulkner, Greene, Hot Spring, Jefferson, Lawrence, Lonoke, Miller, Monroe, Phillips and Prarie.

Preliminary State damage assessments indicate more than 1,300 homes were affected, of which 427 were destroyed and more than 900 were damaged. Neighborhoods in the city of Little Rock (Pulaski County) reported the highest number of homes impacted with more than 100 destroyed and 500 damaged.
See http://www.fema.gov/diz99/d1266.htm for more information on this disaster.

## FEMA Updates Continued: President Orders Disaster Aid For Tennessee Tornado Victims

The Dial family and friends search for memorable remnants of their lives. Their home was destroyed while (father) Robert, (wife) Michele, (mother) Ernestine and (daughter) Andrea clung to each other in the hallway.
FEMA photo by Lynne Keating.

Washington January 19, 1999 -- Twelve counties in tornado-ravaged western Tennessee have been designated eligible for federal assistance by the head of the Federal Emergency Management Agency (FEMA) under President Clinton's major disaster declaration issued for the state this morning.

FEMA Director James Lee Witt said the President ordered the aid immediately after reviewing the agency's analysis of the state's expedited request for federal disaster relief submitted earlier today. The declaration covers damage from severe storms, tornadoes and high winds that struck the state starting Sunday, Jan. 17.
"The President is very concerned about the tragic loss of life and suffering caused by these disastrous storms," said Witt, who accompanied Vice President Gore on a tour of the damaged area this morning. "His quick action helps ensure that assistance will be provided to all those in need as fast and efficiently as possible."

# Upcoming Civil Defense Related Events in the USA

[Thanks to the Natural Hazards Center at the University of Colorado, Boulder for much of this information]

**March 13-14th: National Home Preparedness Association Survival Show.** Clark County Fairgrounds. Springfield, Ohio. Admission $6, 9-5 Saturday and Sunday. Exit 59 off of I70. Call 614-891-1224 for details.

**March 16-17: Year 2000 Contingency Planning and Preparedness for Government.** Offered by: International Quality and Productivity Center (IQPC). Arlington, Virginia: Contact: IQPC, 150 Clove Road, P.O. Box 401, Little Falls, NJ 07424-0401; (800) 882-8684 or (973) 256-0211; fax: (973) 256-0205; e-mail: info@iqpc.com; WWW: http://www.iqpc.com. [Note: IQPC offers a series of Y2K seminars for various sectors - health, utilities, local government, business]

**March 17-18. 1999 Annual Conference of the Illinois Association for Floodplain and Stormwater Management.** Rosemont, Illinois: Contact: Vincent Parisi, Conference Chair, Illinois DNR, 201 West Center Court, Schaumburg, IL 60196; (847) 705-4341; fax: (847) 705-4548; e-mail: vparisi@dnrmail.state.il.us -or- Mary Lu Wetmore, Illinois Association for Floodplain and Stormwater Management, 153 Nanti, Park Forest, IL 60466; (708) 747-5273.

**March 17-19. Virginia Emergency Management Conference - 1999 Focus: Severe Weather.** Williamsburg, Virginia: Contact: (757) 491-2800; e-mail: comcon@erols.com; WWW: http://www.vdes.state.va.us.

**March 21-24. Tenth Annual Corporate Contingency Planning Seminar and Exhibition.** Offered by: The Disaster Recovery Journal and Disaster Recovery Institute: San Diego, California; For details about any of these meetings, contact: Mercedes Knese, Conference Registrar, Disaster Recovery Journal; (314) 894-0276; fax: (314) 894-7474: e-mail: drj@drj.com: WWW: http://www.drj.com.

**March 23. Partnership for Disaster Reduction Program.** University Collaborators' Meeting. Idaho Falls, Idaho: Sponsor: Idaho National Engineering and Environmental Laboratory. This meeting is open to the public. Contact: Bill Richins; (208) 526-0522; e-mail: wdr@inel.gov. More information on the Partnership for Natural Disaster Reduction is available from http://www.inel.gov/homesaver.

**March 24-26. Floodplain Management Association (FMA) Spring Conference**: "Technology and Modernization in Floodplain Management." San Diego, California: Contact: Laura Hromadka, Conference Coordinator, FMA, P.O. Box 2972, Mission Viejo, CA 92692; (949) 766-8112; fax: (949) 459-8364; e-mail: fmalaura@pacbell.net.

**March 24-27. EMS Today '99.** Sponsor: JEMS Magazine. Denver, Colorado: Contact: Kevin Flanagan, Jems Communications, P.O. Box 2789, Carlsbad, CA 92018-2789; (800) 266-5367 or (760) 431-9797; fax: (760) 431-8135.

**March 28-31. Ninth Annual Disaster Recovery Contingency Planning and Business Continuation Using Telecommunications Conference and Trade Show.** Sponsor: International Disaster Recovery Association (IDRA). Boston, Massachusetts: Contact: IDRA, c/o BWT Associates, P.O. Box 4515, Turnpike Station, Shrewsbury, MA 01545; (508) 845-6000; fax: (508) 842-2585; WWW: http://www.idra.com.

**March 29-31. First U.S. Weather Research Program Science Symposium.** Host: National Center for Atmospheric Research. Boulder, Colorado: The focus will be hurricanes and precipitation, and it is open to both physical and social scientists. A letter of invitation is at: www.dir.ucar.edu/esig/socasp/zine/13_invite.html and an agenda is available at http://uswrp.mmm.ucar.edu/uswrp/meetings/0329-31_99.html.For additional information, contact the Environmental and Societal Impacts Group, National Center for Atmospheric Research, P.O. Box 3000, Boulder, CO 80307; (303) 497-8117; fax: (303) 497-8125; e-mail: jan@ucar.edu.

**March 29-31. Ninth Annual National Radiological Emergency Preparedness (NREP) Conference.** Baton Rouge, Louisiana: Contact: Prosanta Chowdhury, LDEQ Radiation Protection Division, P.O. Box 82135, Baton Rouge, LA 70884-2135; (225) 765-0139; fax: (225) 926-1903; e-mail: prosanta_c@deq.state.la.us; WWW: http://www.deq.state.la.us/oarp/rpd/rep.htm.

**March 29-April 2. 21st Annual National Hurricane Conference.** Sponsors: American Association of Wind Engineering, American Meteorological Society, and just about everyone else involved in hurricanes. Orlando, Florida: Contact: National Hurricane Conference, 2952 Wellington Circle, Tallahassee, FL 32308; (850) 906-9224; fax: (850) 906-9228; WWW: http://www.netally.com/nhc.

**March 30-April 1. Partners in Emergency Preparedness 1999 Conference.** Co-hosts: Western Washington Emergency Network, Washington State Emergency Management, Washington State Emergency Management Association, and the State Emergency Response Commission. Bellevue, Washington: Contact: Washington State Emergency Management, Camp Murray, WA 98430-5122; (253) 512-7046; e-mail: j.vollmer@emd.wa.gov. For registration information, contact: Columbia Resource Group; (206) 441-6448; e-mail: preparedness@crgnet.com. By January information will be available via the World Wide Web: http://www.wa.gov/mil/wsem/.

**April 7-9: Year 2000 Expo** (over 250 Exhibitors), The San Jose Convention Center - 10am to 9pm; April 9, 1999 - 10am to 6pm, San Jose, CA. For more information or to reserve a booth, see www.y2kexpos.com or call (509) 487-1667.

**April 9, 10 & 11: Preparedness Expo** in Dallas, Texas at the Big Town Expo Hall, 800 Big Town Blvd. Mesquite, TX. Call 801-256-9978 or see www.preparedness.com for more details.

**April 11-14, 1999. The UCLA Conference on Public Health and Disasters (The Multidisciplinary Context of Public Health and Disasters).** Sponsor: UCLA Center for Public Health and Disaster Relief. Redondo Beach, California: Contact: Eva Selski, Center for Public Health and Disaster Relief, UCLA School of Public Health, Box 951772, Los Angeles, CA 90095-1772; (310) 794-6646; fax: (310) 794-1805; e-mail: eselski@ucla.edu; WWW: http://www.ph.ucla.edu/cphdr/.

**April 13-14. Year 2000 Contingency Planning and Emergency Management for Municipalities and Local Government.** Offered by: International Quality and Productivity Center (IQPC). Atlanta, Georgia: Contact: IQPC, 150 Clove Road, P.O. Box 401, Little Falls, NJ 07424- 0401; 1-800-882-8684 -or- (973) 256-0211; fax: (973) 256-0205; e-mail: info@iqpc.com; WWW: http://www.iqpc.com.

**April 16, 17, 18th: Preparedness Expo** in Kansas City, Missouri. Call 801-256-9978 or see www.preparedness.com for more details.

**April 18-21. American Society of Civil Engineers (ASCE) Structures Congress.** New Orleans, Louisiana: Includes sessions on seismic analysis, design, and retrofit; wind effects on structures, etc. Contact: ASCE, 1801 Alexander Bell Drive, Reston, VA 20191; 1-800-548- 2723, (703) 295-6009; fax: (703) 295-6144; e-mail: conf@asce.org; WWW: http://www.asce.org -or- R. Richard Avent, Chairperson of the Steering Committee, Department of Civil and Environmental Engineering, Louisiana State University, Baton Rouge, LA 70803; (504) 388-8735; fax: (504) 388-8652.

**April 18-21. North American Snow Conference.** Sponsor: American Public Works Association (APWA). Duluth, Minnesota: Contact: APWA, 2345 Grand Boulevard, Suite 500, Kansas City, MO 64108-2625; (816) 472-6100; fax: (816) 472-1610; e-mail: apwa@mailworks.pubworks.org. org; WWW: http://www.pubworks.org.

**April 21-23. Third Annual West Coast Emergency Medical Symposium: Emergency Care - Diversity in Practice.** Palm Springs, California: Contact: Emergency Medical Symposium; 1-888-367-9119; e-mail: emed@esanetwork.com.

**April 21-23. CPM '99: Contingency Planning and Management 1999 Annual Conference**: Sponsor: Contingency Planning and Management Magazine. New Orleans, Louisiana: Contact: CPM '99, WPC Expositions, 84 Park Avenue, Flemington, NJ 08822; (908) 788-0343, ext. 135; fax: (908) 788-9381; e-mail: CPM99@witterpublishing.com; WWW: http://www.contingencyplanexpo.com.

**April 21-25. Fifth World Congress on Stress, Trauma, and Coping in the Emergency Services Professions.** Sponsor: International Critical Incident Stress Foundation (ICISF). Baltimore, Maryland: Contact: ICISF, 10176 Baltimore National Pike, Unit 201, Ellicott City, MD 21042; (410) 750-9600; fax: (410) 750-9601; e-mail: wcong5@icisf.org: WWW: http://www.icisf.org.

**April 26-29. Basic Hazards in the U.S. (HAZUS) Training.** Offered by: Federal Emergency Management Agency (FEMA), Emergency Management Institute (EMI). Emmitsburg, Maryland: Contact Lillian Virgil, EMI, 16825 South Seton Avenue, Emmitsburg, MD 21727; (301) 447-1490.

**May 3-5. Seismological Society of America (SSA) Annual Conference.** Seattle, Washington: Abstracts due February 5, 1999. Contact: S. Malone, Geophysics Program, Box 351650, University of Washington, Seattle, WA 98195-1650; (206) 685-3811; fax: (206) 543-0489; e-mail: ssa99@geophys.washington.edu; WWW: http://www.geophys.washington.edu/SEIS/SSA99/.

**May 3-7. Retrofitting Flood-Prone Residential Buildings.** Offered by: Federal Emergency Management Agency (FEMA), Emergency Management Institute (EMI). Emmitsburg, Maryland: Contact Dan Bondroff, EMI, 16825 South Seton Avenue, Emmitsburg, MD 21727; (301) 447-1278.

**May 7-12. Natural Disaster Medical System (NDMS) Annual Conference.** Washington, D.C.: Contact the Office of Emergency Preparedness/ National Disaster Medical System, Department of Health and Human Services, 12300 Twinbrook Parkway, Suite 360, Rockville, MD 20857; (800) 872-6367 (press the "star" key) or (301) 443-1167; fax: (301) 443-5146; e-mail: ndms@usa.net; WWW: http://www.oep-ndms.dhhs.gov.

**May 10-12. 1999 Georgia Governor's Severe Weather Conference.** Hosts: Georgia Emergency Management Agency and others. Jekyll Island, Georgia: Contact: Buzz Weiss or Ken Davis, (404) 635-7000; 1-800- 879-4362.
American Water Resources Association (AWRA) Spring Specialty Conference: "Potential Consequences of Climate Variability and Change to Water Resources of the United States." Atlanta, Georgia: May 10-12, 1999. Contact: AWRA, 950 Herndon Parkway, Suite 300, Herndon, VA 20170-5531; (703) 904-1225; fax: (703) 904-1228; e-mail: awrahq@aol.com; WWW: http://www.awra.org.

**May 11-14. 1999 Conference on Flood Warning Systems, Technologies, and Preparedness**: Third National Conference and Exposition of the National Hydrologic Warning Council incorporating the 16th Annual Conference of the ALERT Users Group. San Diego, California: Contact: National Hydrologic Warning Council, 10852 Douglass Road, Anaheim, CA 92806. Mark Heggli, (916) 574-2627; e-mail: heggli@water.ca.gov -or- Chris Crompton, (714) 567-6360; e-mail: cromptonc@pfrd.co.orange.ca.us; WWW: http://www.alertsystems.org.

**May 12-15. 1999 Hazardous Materials Advisory Council (HMAC) Annual Conference and Hazardous Materials Exposition**. Washington, D.C.: May 12-14, 1999. Contact: HMAC, 1101 Vermont Avenue, N.W., Suite 301, Washington DC 20005-3521; (202) 289-4550; fax: (202) 289-4074; e-mail: hmacinfo@hmac.org; WWW: http://www.hmac.org.
**May 16-19. 1999 National Flood Conference.** Sponsor: National Flood Insurance Program (NFIP). Denver, Colorado: Contact: NFIP, 7700 Hubble Drive, Lanham, MD 20706; (301) 918-1439; TDD: (301) 918-1409; e-mail: becky.reardon@fema.gov; WWW: http://www.fema.gov/nfip/99conf.htm.

**May 17-20. Technology Partnership for Emergency Management Workshop and Exhibition**. Host: Oak Ridge National Laboratory. Gatlinburg, Tennessee: Contact: John Sorensen, Director, Emergency Management and Preparedness Program, Oak Ridge National Laboratory, Oak Ridge, TN 37831-6206; (423) 576-2716; fax: (423) 574- 5938; e-mail: jhs@ornl.gov.

**May 17-20. National Fire Protection Association (NFPA) 1999 Annual Meeting.** Baltimore, Maryland: Contact: Casey C. Grant, Assistant Vice-President, Codes and Standards Administration, NFPA, One Batterymarch Park, P.O. Box 9101, Quincy, MA 02269-9101; (617) 770-3000; fax: (617) 770-0700; WWW: http://www.nfpa.org.

**May 18-19. Hazardous Materials Emergency Preparedness Workshop.** Sponsor: U.S. Department of Transportation, Arizona Emergency Response Commission (AZSERC), and others. Phoenix, Arizona:

**May 18- 19. Training Program for Industries Subject to the Emergency Planning and Community Right to Know Toxic Chemical Release Inventory Reporting Requirements**. Sponsor: AZSERC. Phoenix, Arizona:

**May 19-20. Emergency Managers Weather Information Network (EMWIN) Regional Conference**. Fort Collins, Colorado: Contact: Bob Glancy; (303) 361-0661/0662; fax: (303) 371-5508 e-mail: Robert.Glancy@noaa.gov.

**May 20-21. Regional Response Team Meeting.** Hosted by: U.S. Environmental Protection Agency Region IX and U.S. Coast Guard. Phoenix Arizona: For further information contact: Daniel Roe, AZSERC: (602) 231-6346; fax: (602) 392-7519; e-mail: roed@dem.state.az.us.

**May 24-28. CAMEO (Computer Aided Management of Emergency Operations) '99 International Workshops.** Phoenix, Arizona: For further information contact: Daniel Roe, AZSERC: (602) 231-6346; fax: (602) 392-7519; e-mail: roed@dem.state.az.us. The Web page for CAMEO99 is: http:/www.epa.gov/ceppo/cameo99.html

**May 24-28. 23rd Annual Conference of the Association of State Floodplain Managers (ASFPM)**: "Planning Ahead: Flood Loss Reduction in the 21st Century." Portland, Oregon: Contact: ASFPM, 4233 West Beltline Highway, Madison, WI 53711; (608) 274-0123; fax: (608) 274-0696; e-mail: asfpm@execpc.com; WWW: http://www.floods.org.

**May 25- 27. Tsunami Symposium**. Sponsor: Tsunami Society. Honolulu, Hawaii: Abstracts are due February 1, 1999 and should be directed to Charles Mader, Tsunami Symposium Program Chairperson, 1049, Kamehame Drive, Honolulu, HI 96825-2860; (808) 396-9855 or (970) 949-6845 (December 21-April 1). For additional information about the conference, contact the Tsunami Society, P.O. Box 25218, Honolulu, HI 96825; or call the symposium chairperson, George Curtis; (808) 963- 6670.

**May 26-27. 1999 Wisconsin Emergency Management Association (WEMA) Conference.** Green Bay, Wisconsin: Contact: Wayne Baetsen, WEMA President, (715) 478-3430.

**June 3-6. International Hazardous Materials Response Teams Conference.** Sponsors: International Association of Fire Chiefs (IAFC) and others. Towson, Maryland: Contact: Professional Development Department, IAFC, 4025 Fair Ridge Drive, Fairfax, VA 22033-2868; (703) 273-0911; fax: (703) 273-9363; e-mail: education@iafc.org; WWW: http://www.iafc.org/conference.

**June 5-6: The 17th annual meeting of the Doctors for Disaster Preparedness** will be held in Seattle at the Marriott Hotel, Sea-Tac Airport. An optional tour of Boeing or a nuclear submarine base may be available on June 4 or June 7. Call 800-643-5479 for reservations at Seattle Marriott $84 (mention DDP to obtain rate). $95 for the meeting (includes two luncheons and a banquet), plus $20 for each for the Boeing tour. To reserve a spot, call 520-325-2680 or write DDP, 2509 N. Campbell, Box 272, Tucson, AZ 85719.

**June 6-9. Public Risk Management Association (PRIMA) Annual Meeting.** San Diego, California: Contact: PRIMA, 1815 North Fort Myer Drive, Suite 1020, Arlington, VA 22209; (703) 528-7701; fax: (703) 528-7966; e-mail: primahq@aol.com.

**June 8-11. Community and Family Preparedness Conference.** Host: Federal Emergency Management Agency, Community and Family Preparedness Program. Emmitsburg, Maryland, The organizers are currently soliciting ideas for possible presentations. Contact: Ralph Swisher, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472; (202) 646-3561; e-mail: ralph.swisher@fema.gov.

**June 10 – 12th: Year 2000 Expo** (Over 160 Exhibitors). June 10-11, 1999 - 10am to 9pm; June 12, - 10am to 6pm, Georgia International Convention Center, Atlanta, GA. For more information or to reserve a booth, see www.y2kexpos.com or call (509) 487-1667.

**June 11, 12 & 13: Preparedness Expo** in Philadelphia, Pennsylvania at the Fort Washington Expo Center - Hall B, 1100 Virginia Dr., Ft. Washington, PA. Call 801-256-9978 or see www.preparedness.com for more details.

**June 18, 19 & 20: Preparedness Expo** in TAMPA, Florida, Florida State Fairgrounds - Expo Hall, Post Office Box 11766, Tampa, FL. Call 801-256-9978 or see www.preparedness.com for more details.

**June 16-19. Response 99.** Sponsors: National Association of Search and Rescue, International Association of Fire Chiefs (IAFC), and others. Orlando, Florida: Contact: Professional Development Department, IAFC, 4025 Fair Ridge Drive, Fairfax, VA 22033-2868; (703) 273-0911; fax: (703) 273-9363; e-mail: education@iafc.org; WWW: http://www.iafc.org/conference.

**June 23-26. SR/DR (Search and Rescue/Disaster Response)'99 Convention and Expo.** Nashville, Tennessee: Contact SR/DR '99, 2413 West Algonquin Road, Suite 411, Algonquin, IL 60102; (715) 547-3340; e- mail: srdr@newnorth.net; WWW: http://srdr.com.

**June 24-26. The EMS Magazine Exposition.** Cleveland Convention Center, Cleveland, Ohio, 500 Lakeside Avenue. Call 800-513-2094 to register.

**July 30, 31 & August 1st. Preparedness Expo** in Seattle, Washington, Puyallup Fairgrounds - Pavilion & Expo Hall, P. O. Box 430, Puyallup, Washington. Call 801-256-9978 or see www.preparedness.com for more details.

**September 17, 18 & 19. Preparedness Expo** in Detroit, Michigan, Novi Exposition Center, 43700 Expo Center Dr., Novi, MI. Call 801-256-9978 or see www.preparedness.com for more details.

**September 24, 25 & 26. Preparedness Expo** in Nashville, Tennessee, I-24 Expo Center – Hall, A900 Expo Dr., Smyrna, TN. Call 801-256-9978 or see www.preparedness.com for more details.

**November 5, 6, 7. Preparedness Expo** in Denver, Colorado, Denver Merchandise Mart, 451 East 58th Ave. Denver, CO. Call 801-256-9978 or see www.preparedness.com for more details.

**Note: If you'd like future editions of the *Journal* or our website to list a Civil Defense related event (not shown here), please send the information to: kbriggs@tacda.org or fax information to: 904-964-9641 (Attention: Kevin Briggs).**

**Thanks!**
**[Note: TACDA reserves the right to select which events will be listed]**

*March 1999*

# TACDA Store Catalog


***Special offers and fund-raisers – Great values in food/supplies/shelters!***



## 1 - 2 Year & 4-Month Food Supplies from Yellowstone River Trading

These new food supply fundraising offers are **currently shipping within 6 weeks or less.** These supplies provide many options for high quality food at low prices. **All current members of TACDA can deduct $25 from the cost of each of these food offers.** If you are not a current member but decide to become one, you can purchase these food supplies at the prices shown below, in addition to having a year long TACDA membership, which provides a 1-year subscription to the *Journal of Civil Defense* as well as future discounts on other purchases from the TACDA Store.

| Stock # | Product Description * | Freight & Delivery Times | Your Cost (Less Shipping) * |
|---|---|---|---|
| YRT-1 (see full description on TS-2) | One-Year Healthy Food Supply (requires grain mill) | 520 Lb. in 120 cans (20 cases), 3 weeks or less | $1596.00 |
| YRT-2 ** (see full description on TS-3) | One-Year Bulk Food Supply (requires grain mill) | 442 Lb. in 9 buckets + 2 cans, 3 weeks or less | $300.00 |
| YRT-3 (see full description on TS-3) | One-Year Value Pack Food Supply | 325 Lb. in 66 cans (11 cases), 6 weeks or Less | $862.00 |
| YRT-4 (see full description on TS-3) | Two-Year Healthy Food Supply Combo | 962 Lb. in 122 cans & 9 buckets, 3 weeks or less | $1876.00 |
| YRT-5 (see full description on TS-3) | Two-Year Value Pack Combo | 767 Lb. in 68 cans & 9 buckets, 6 weeks or less | $1152.00 |
| YRT-6 (see full description on TS-4) | Four-Month Healthy Food Supply | 207 Lb. in 48 cans (8 cases), 3 weeks or less | $695.00 |
| YRT-7 (see full description on TS-4) | Truck Load Survival Food Sale | Weight & delivery time based on order | Cost based on order |
| **** Note: There are additional food supply offers for Super-Clean on Page TS-5** | | | |

* Note: Prices and shipping times are subject to change without notice. All food products are guaranteed to be fresh at time of shipping. Any food product found to be defective (for example, due to shipping damage) will be exchanged, at no cost to the buyer by Yellowstone River Trading, Inc. at (800) 585-5077. Occasionally, product substitutions of like value and quality and type may be required to avoid shipping delays. Additional volume discount pricing is available. Shipping point is from Bozeman, Montana 59718. All 6-gallon buckets are lined with mylar bags that are then filled with food and then sealed with 2 each D750 oxygen absorbers. **All #10 steel double enameled cans have cooking instructions and hold 7/8ths of a gallon** and include an oxygen absorber. These offers are made available through Yellowstone River Trading, Inc.

## YRT-1, One-Year Healthy Food Supply:

Most long-term food storage programs load up with inexpensive beans and wheat. Unfortunately, many people can't tolerate large quantities of whole wheat, and many have difficulty digesting beans. We include unbleached white flour (for wheat intolerant diets), and most of our beans are pre-cooked and powdered. This makes the beans easier to prepare and digest. We also include a more expensive Swiss Whey milk product, as a substitute for the conventional powdered milk, as children tend to like it more. Swiss Whey milk actually tastes good. Here are a few more reasons that the healthy program stands out above more value-oriented programs:

- Roughly 25% of the included food requires no cooking.
- There are no unnatural preservatives.
- Our granola is made without oil to insure maximum shelf life. It is also fruit sweetened, and flavored with blueberries.
- Our pancake mix contains no aluminum baking powder.
- Our tahini (sesame butter) lasts up to 10 years without preservatives.

**We avoid:**

- Refined sugars.
- BHA & BHT (included in most cheese & butter powders).
- Hydrogenated oils (shortening & margarine powders).
- Sulfured fruit.
- MSG &HVP (known to destroy brain cells).
- TVP (textured vegetable protein).

**We include:**

- Montana Sweet Clover honey.
- Cheese powder (preserve w/Rosemary).
- Pure olive oil.
- Freeze-dried, unsulfured fruit.
- Soup mixes made without additives.
- Real protein; freeze dried chicken and beef.

We have really gone out of our way to get you the best tasting and most healthy long-term food program available on the market today. And best of all, we are not currently backlogged! You don't have to wait months to get your food from us.

**This unit includes the following:**
**Fruits: 9 cans**
1 can freeze dried Strawberries, 1 can freeze dried Blueberries, 1 can Fruit Galaxy, 1 can Apple Dices (unsulfured), 1 can Apple Sauce Powder, 1 can Low Moisture Raisins, 1 can Date Bits, 2 cans Apple Slices
**Vegetables: 14 cans**
2 cans Tomato Powder, 2 cans freeze dried Cut Green Beans, 1 can dehydrated Sweet Garden Peas, 1 can Carrot Dices, 1 can Chopped Onions, 2 cans Potato Dices, 1 can Sweet Corn, 3 cans Real Potatoes (mashed), 1 can Broccoli
**Dairy and Proteins: 18 cans**
6 cans Swiss Whey Milk, 2 cans freeze dried Chicken, 4 cans Whole Egg Powder, 2 cans Cheese Powder, 2 cans freeze dried Beef, 2 cans Sesame Butter (or substitute Peanut Butter Powder)
**Grains: 52 cans**
4 cans Cornmeal, 6 cans Long Grain White Rice, 12 cans Hard Winter Wheat, 6 cans Rolled Oats, 6 cans Elbow Macaroni, 6 cans Soft White Pastry Wheat, 3 cans Apple Blueberry Granola, 1 can Popcorn, 6 cans Unbleached Flour, 2 cans Multi-grain Pancake Mix
**Beans: 8 cans**
1 can Powdered Pinto Beans, 1 can Powdered Black Beans, 1 can Kidney Beans, 1 can Powdered Navy Beans, 3 can Lentils, 3 can Split Green Peas
**Beverages: 2 cans**
1 can Cocoa Mix, 1 can Black Tea
**Soups and Gravies: 5 cans**
1 can Chicken Soup Base Mix, 1 can Green Pea Soup with Hickory, 1 can Yellow Pea Chowder Soup Mix, 1 can Turkey Gravy Mix, 1 can Powdered Pizza and Pasta Sauce
**Adjuncts and Misc.: 10 cans**
2 cans Honey, 1 can Salt, 1 can Rumford Baking Powder (non aluminum), 2 cans olive oil, 1 can Unflavored Gelatin, 1 can Cornstarch, 1 can Alfalfa Sprouting Seeds, 1 can with 2 packages (17.64 oz each) of SAF Instant Yeast and 1 16oz. Package of Baking Soda.
Also included are 40 plastic reclosure lids for #10 cans and recipe book "Cooking with Home Storage".

**Total: 120 #10-size cans, (20 cases), Net Weight: 520 lbs. of low moisture food providing over 1750 balanced calories per day for one year.** All ingredients are low moisture, packaged in an oxygen free atmosphere in #10 double enameled steel cans. Directions for cooking items are included on the cans. **See other details on note to summary table on page TS-1.**

**Price: $1,596 {or $1571 for TACDA members}** (plus freight from Montana). **Shipping within one week is currently available.**

## YRT-2, One-Year Bulk Food Supply:

This one-year supply of bulk food staples of wheat and beans provides approximately 1700 calories per day, and up to 103 grams of protein per day, for one year. Many people who live on essentially vegetarian diets eat a little of their higher-quality protein food, such as beans, at every meal, in addition to grains. Grains alone are low in some of the amino acids that the people need for protein. The wheat must be ground up by using a grain mill to be properly digested. The wheat and beans should last 10 to 20+ years, if stored in a relatively cool and dry environment.
This unit includes:

- 3 6-gallon buckets of Hard Red Wheat.
- 2 6-gallon buckets of Soft White Wheat.
- 1 6-gallon bucket of Unbleached Flour.
- 1 6-gallon bucket of Red Beans.
- 1 6-gallon bucket of Pinto Beans.
- 1 6-gallon bucket of Small White Navy Beans.
- 1 #10 can of Rumford Baking Powder.
- 1 #10 can with 16 oz. baking soda and 2 pkg (17.64 oz. Ea.) SAF Instant Yeast.

**Total**: 9 6-gallon plastic buckets with food placed in mylar bags with two D750 oxygen absorbers, plus 2 #10 size cans with baking powder/soda/yeast with an oxygen absorber. Net Weight: 442 lbs. of food providing roughly 1700 calories per day for one year.
Price: $300 {or $275 for TACDA members} (plus freight from Montana). Shipping within one week is currently available.

## YRT-3, One-Year Value Pack:

The One-Year Value Pack is a program for those who want a conventional long-term food storage program similar to others offered by many other dealers. This is a program with a good assortment of grains, beans and vegetables. Unlike our "Healthy" program, however, it does contain some refined sugar, Textured Vegetable Proteins (T.V.P. – a meat substitute), hydrogenated oils and some items with MSG or other preservatives. It provides 1200 calories and 35 Grams of protein per day, for one year. This unit includes:

**Fruits:**
1 can Fruit Galaxy, 1 can Strawberry Flavored Apple Flakes, 1 can Date bits, 1 can Apple Sauce Powder, 1 can Peach Flavored Apple Flakes, 1 can Banana Slices

**Vegetables:**
2 cans Stew Blend, 1 can Garden Peas, 1 can Green Beans, 1 can Carrot Dices, 2 cans Potato Dices, 1 can Hashbrowns, 1 can Sweet Corn, 1 can Tomato Powder, 1 can Chopped Onions, 1 can Real Mashed Potatoes

**Dairy and Proteins:**
6 cans Regular Powdered Milk, 6 cans Instant Powdered Milk, 1 can Whole Egg Powder, 1 can Cheese Powder, 1 can Beef Bouillon, 1 can Egg Mix, 2 cans Beef TVP, 1 can Taco TVP, 1 can Bacon TVP, 1 can Sausage TVP, 1 can Chicken TVP

**Grains:**
1 can Cornmeal, 1 can Pearl Barley, 2 cans Rolled Oats, 3 cans Elbow Macaroni, 2 cans Multi-Grain Pancake Mix, 1 can Popcorn, 3 cans White Rice, 1 can Cream of Wheat cereal

**Beans:**
1 can Red Beans, 1 can Pinto Beans, 1 can Small White Beans

**Beverages:**
1 can Cocoa Mix, 1 can Peach Drink

**Soups & Gravies:**
2 cans ABC Soup Mix, 1 can White Cream Sauce

**Adjuncts and Misc:**
1 can Salt, 1 can Margarine powder, 1 can Cornstarch, 1 can Sugar

**Total**: 66 #10-size cans, (11 cases), Net Weight: 325 lbs. of low moisture food providing over 1200 balanced calories per day for one year. All ingredients are low moisture, packaged in an oxygen free atmosphere in #10 double enameled steel cans. Price: $862 {or $837 for TACDA members} (plus freight from Montana). Shipping is currently at 6 weeks or less.

## YRT-4, Two-Year Healthy Food Supply Combo:

This offer combines offers YRT-1 and YRT-2 shown above. The only difference is that there is a price break, as noted in the summary chart on page TS-1.

## YRT-5, Two-Year Value Pack Combo:

This offer combines offers YRT-2 and YRT-3 above. The only difference is that there is a price break as noted in the summary chart on page TS-1.

## YRT-6, Four-Month Healthy Food Supply:

**This offer provides the same quality of food as our One-Year Healthy Food Supply described above (see YRT-1 on page TS-2), but with more ample helpings.** Hence, there are no preservatives and only the finest quality foods are included. For example, we include unbleached white flour (for wheat intolerant diets) and most of our beans are pre-cooked and powdered. This makes the beans easier to prepare and easier to digest. We also include a more expensive Swiss Whey milk product as a substitute for the conventional powdered milk, as children tend to like it more. Swiss Whey milk actually tastes good. Our pancake mix contains no aluminum baking powder. The four-month package contains the following:

**Fruits:**
1 can Apple sauce, 1 can Fruit Galaxy, 1 can low moisture raisins

**Vegetables:**
2 cans Real Mashed Potatoes, 2 cans Cut Green Beans, 1 can Chopped Onions, 1 can Sweet Corn, 1 can Tomato Powder

**Dairy and Proteins:**
1 can Cheese Powder, 2 cans Whole Egg Powder, 2 cans Swiss Whey Milk Drink, 1 can Sesame Butter (or substitute Peanut Butter), 1 can Freeze Dried Chicken, 1 can Freeze Dried Beef

**Grains:**
2 cans Unbleached Wheat Flour, 2 cans Multi-grain Pancake Mix, 2 cans Elbow Macaroni, 2 cans White Rice, 1 can popcorn, 1 can Apple Blueberry Granola, 2 cans Corn Meal, 1 can Whole Wheat Flour, 1 can Soft White Pastry Wheat, 2 cans Quick Rolled Oats

**Beans:**
1 can Powdered Navy Beans, 1 can Powdered Pinto Beans, 1 can Kidney Beans

**Beverages:**
1 can Cocoa Mix

**Soups and Gravies:**
2 cans Hickory Flavored Green Pea Soup Mix, 1 can Corn Chowder Soup. 1 can Chicken Soup Base Mix, 2 cans Powdered Pizza and Pasta Sauce

**Adjuncts and Misc:**
1 can Pure Olive Oil, 1 can Alfalfa Sprouting Seeds, 1 can Montana Sweet Clover Honey, 1 can with SAF Instant Yeast, 3 lbs salt, and 1 package of Baking Powder
Also includes 20 plastic reclosure lids for #10 cans.

**Total of 48 #10 cans** (8 cases). Net Weight: 207 lbs. of low moisture food providing balanced calories for 4 months. All ingredients are low moisture, packaged in an oxygen free atmosphere in #10 double enameled steel cans.
Price: $695.00. {or $670 for TACDA members} (plus freight from Montana). Shipping is currently at 1 week.

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## YRT-7, Custom Truck Load Survival Food Supply

Get together with your friends and put together a group order! Bucket or can your own food and save thousands of dollars! 40,000 Lb. truck load of bulk food to your location. 6 gallon buckets, #10 cans, oxygen absorbers, mylar bags, grains, beans, dehydrated fruits and vegetables, powdered milk, freeze dried meats/fruits/vegetables, honey, and pure olive oil in 55 gallon drums and 5 gallon buckets. Call TACDA, at 1-800-425-5397, to arrange for a custom order for your group.

# *Super-Clean*™* Wheat + Supplies

The Michael Clark Company, in conjunction with the *TACDA Store* makes the following three food supplies available. All of these food supplies are currently shipping in approximately three weeks or less, however, as we approach the year 2000, these delivery times may increase. ***Note: Truck load orders (bulk quantities) of the items listed below can be arranged by TACDA. Call for details.***

## One-Year Super-Clean™ Wheat Package, Stock #: MCC-1

***Shipping Weight = 450 Lb.***
***Price = $189.00, less $25 for TACDA members (price does not include shipping)***
This unit includes a total of nine 6-gallon pails of Super Clean™ Wheat. Choose from Hard Red wheat or Soft White wheat. For example, you can choose 2 pails of the Hard Red and 7 pails of the Soft White wheat, etc. The desired quantities of either type must be specified at the time of order. The default, however, is 9 pails of Hard Red wheat. Hard wheat is higher in protein than soft wheat and is more commonly used in breads. Soft wheat is used for lighter baked goods such as pastries and all purpose flour, and does make good bread, though not as heavy. **All buckets of wheat are nitrogen packed in addition to using Super-Clean™ wheat.** Please allow three (3) weeks for delivery.

## One-Year Super-Clean™ Wheat & Yeast Package, Stock # MCC-2

***Shipping Weight = 420 Lb.***
***Price = $295.00, less $25 for TACDA members (price does not include shipping)***
This unit includes a total of **eight 6-gallon food-grade plastic pails of Hard Red wheat and/or Soft White wheat, and one 6-gallon pail of *Red Star* active dry yeast (500 packs, ¼ oz. each), nitrogen-packed and fresh from the factory for maximum shelf life.** As in the 1-year wheat package, mentioned above, you may substitute any combination (totaling 8 pails) of Hard Red wheat or Soft White wheat, however, unless otherwise specified, Hard Red wheat is the default. Hard wheat is higher in protein than soft wheat and is more commonly used in breads. Soft wheat is used for lighter baked goods such as pastries and all purpose flour, and does make good bread, though not as heavy. All substitutions must be specified at the time of order. Please allow three (3) weeks for delivery.

## One-Year Basics Package, Stock # MCC-3

***Shipping Weight = 350 Lb.***
***Price = $435.00, less $25 for TACDA members (price does not include shipping)***
This basics supply includes **55 lb. of USA pure honey, 20 sealed bags of powdered eggs** in one 6-gallon pail, and **5 sealed bags of non-fat powdered milk** in one 6-gallon pail (makes 32 gallons of milk). This unit also includes any combination of the following:

- A total of four 6-gallon pails of Super Clean ™ Hard Red wheat and/or Soft White wheat ... Default is 4 Hard Red wheat.
- A total of two 6-gallon pails of Kidney, Pinto, Navy, or Black beans ... Default is 1 Navy and 1 Pinto.

Please, allow three (3) weeks for delivery.

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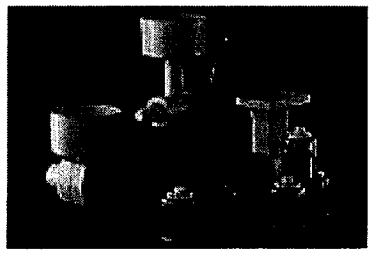
## * The Super Clean™ Process

The Michael Clark Company uses **SUPER CLEAN** ™ wheat for both our hard red wheat and soft white wheat. This is not a normal cleaning process; in fact the process is trademarked. Much of the wheat being sold today is of lower quality, as it is not fully cleaned and the bug eggs are not removed. Stones and sand can be very damaging to your grinder, as well. When you find yourself in the situation to need to rely on your hand grinder, you will not want wheat that has not been completely cleaned.
Some of the wheat being sold in whole form, for home use or long term storage, has been screened and de-stoned, but the majority of it still has the bug eggs attached. While these are normal in wheat, they pose a problem in long term storage, if anything in the packaging process was not just right on the day your shipment was packaged. Should the eggs hatch, the wheat is of diminished value.

# Family Grain Mill



Do you love wholesome, whole grain breads? If so, you'll enjoy the ease with which you can grind your own grains when you use the **Family Grain Mill.** It's unique design and quietness distinguishes it from all other grain mills available on the market today. The Family Grain Mill's *ease of use, functionality,* and *attractive price* have made it one of the most popular on the market!

The Family Grain Mill has reportedly had sales of over 1 million units in Europe and with good reason. It can easily grind wheat, rye, barley, spelt, buckwheat, millet, rice, oats, spices, dried herbs, sesame, and soya. {However, it cannot grind popcorn or any grain that is hard as stone, such as tapioca pearls}. It can be used with dry corn if you first crack the corn at a #4 setting, and then mill the corn normally.

This versatile grain mill grinds 1 cup of wheat in 2 minutes (the same as with the well-known Country Living Grain Mill). For comparison, it takes over 6 minutes to grind 1 cup of wheat with the Back To Basics hand mill. It also was easier to turn the Family Grain Mill's handle at similar settings than with the Country Living Grain Mill.

The mill can be purchased with four attachments:

- **A Flour Mill** - The hardened steel grinding cones in the flour mill will grind hard kernels of grain into the finest flour or you can easily change the setting to coarse meal or anything in between, consistently producing the finest of flour every time.
- **A Flaker Mill** - The flaker mill is not only intended for breakfast cereals, but also for tasty snacks, cookies, desserts, appetizers, and economical main-dish extenders. Its large 5-cup hopper insures faster flaking.
- **A vegetable/fruit/cheese/nut grater & slicer** - This highly versatile unit comes with three interchangeable drums, and like all other attachments, it is extremely easy to clean.
- **A Meat Grinder** - As do all of the other Family grain mill accessories, the meat grinder also promises the same versatility and quality performance that you would expect from such an impressive machine.

Each of these attachments can be either used with the manual hand-crank base or with the electric motor base. The electric motor base is made of extremely durable plastic and is powered by a Bosch® electric motor. The motorized unit operates quietly and at low temperatures to produce healthier results. The grinding cone burrs are made of hardened carbon steel and the unit can be easily adjusted for fine or course milling.

The unit is 20.5" H x 6" W x 15"D and comes with a limited 5 year replacement or repair warranty.

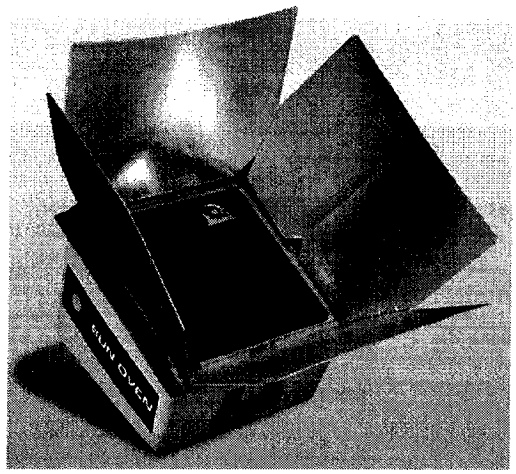
**TACDA is offering the Family grain mill in the following configurations:**

| Stock # | Description | Shipping Weight | Cost Per Unit (Less Shipping) |
|---|---|---|---|
| *FGM-1 | Family Grain Mill with Flour attachment & manual (hand-cranked) base | 6 Lb. | $137.00 |
| *FGM-2 | Family Grain Mill with Flaker attachment & manual (hand-cranked) base | 7 Lb. | $144.00 |
| *FGM-3 | Family Grain Mill with both Flour and Flaker attachments, with manual (hand-cranked) base | 9 Lb. | $196.00 |
| *FGM-4 | Family Grain Mill motorized base unit | 7 Lb. | $173.00 |
| FGM-5 | Family Grain Mill vegetable/fruit/nut processor attachment | 4 Lb. | $83.00 |
| FGM-6 | Family Grain Mill meat grinder attachment | 4 Lb. | $83.00 |
| *FGM-7 | Family Grain Mill with all attachments and both the manual and motorized base | 24 Lb. | $475.00 |

**Note:** TACDA members will receive an additional $25.00 off of all configurations that are marked with an (*).

**If you would like to order on our toll-free order line, call 1-800-425-5397.**

# The Global Sun Oven




## The Ultimate Solar Appliance! Bake, Broil or Steam with Free Sunshine! Also use it to purify water!

**Helps You Harness the Power of the Sun**
One source of power that never fails is the light of the sun. Whether you're dealing with a power outage, or just plain conserving energy, the Global Sun Oven can cook anything that can be baked in a conventional oven. It lets you harness the power of the sun to cook without fuel.

**Lets You Create Your Favorite Recipes**
With the Global Sun Oven you can cook almost anything - breads, cakes, muffins, pizza, vegetables, poultry, fish, meats, casseroles, grains, pasta and desserts, just to name a few.

**Provides High Cooking Temperatures**
Sun Ovens reach temperatures of 360 to 400 degrees Fahrenheit, which are more than sufficient to bake, boil or steam your favorite foods - wherever you happen to take your Global Sun Oven.

**Makes Foods Taste Better**
Sun-baked foods stay moister and have less shrinkage than conventional oven-cooked foods. Also, with the Global Sun Oven there is never any burning or scorching to ruin a meal.

**Is Totally Safe**
Because of the unique way the Global Sun Oven operates, there is never a danger of fire.

**Is Ruggedly Built**
The Global Sun Oven is not a toy. It is a serious appliance that is made for years of trouble-free use. Each Sun Oven is constructed with a strong plastic case that is both durable and easy to clean. It uses Reflexo specular-finish reflectors and a tempered glass door to retain the sun's powerful heat. The Sun Oven features an easily adjustable, self-contained leveling leg to maintain the oven's maximum exposure to the sun, while a built-in Levelator keeps foods level inside the oven to avoid spills.

**Is Totally Portable**
You can take and use the Global Sun Oven virtually anywhere there is sunshine. When the oven is closed it is as portable as a small suitcase. It measures just 19" x 19" and weighs only 21 pounds. It even has a convenient built-in carry-handle.

**Is a Great Hedge Against Power Interruptions**
With a Global Sun Oven, you will be prepared for any interruption to traditional power sources. You will be able to cook any kind of food as well as boiling water. You can enjoy the peace of mind of knowing that as long as there is sunshine, you will have all the power you need to cook your meals. For the past 13 years, Global Sun Ovens have been used successfully in 126 countries around the world. Thousands of cooking enthusiasts in the United States and around the world are using the Global Sun Oven and appreciate the unparalleled features and benefits of using the best manufactured solar cooking device in the world.

Whether you are preparing for Y2K, or you just want to experience the superior taste and nutritional benefits of sun-baked foods, the Global Sun Oven will prove to be a wise investment.

**See next page for more information and ordering details**

# The Most Frequently Asked Questions about the Global Sun Oven.

## Will food prepared in a Global Sun Oven taste the same as food prepared in my conventional oven?

The food tastes much better! Solar cooking allows many of the natural flavors of food, which get baked out in conventional ovens, to remain. The slow, even rise in temperatures in a Global Sun Oven gives the complex carbohydrates time to break down into simple sugars allowing subtle natural flavors to emerge. Sun baked foods stay moist, the natural internal juices do not bake out, resulting in a superior, moist taste and much less shrinkage.

## How long does it take?

Cooking times are close to the same as those in a conventional oven. Because the sun is often trying to run away and hide behind clouds, cooking times can vary. At times it may take a little longer. The factors that affect the cooking time are: the quality of the sunlight at the time you are cooking, the types and quantities of the food being cooked, and how often the oven is being refocused. On cloudy days, the oven may only reach temperatures 200 degrees or less.

## Does a Global Sun Oven require special pots and pans?

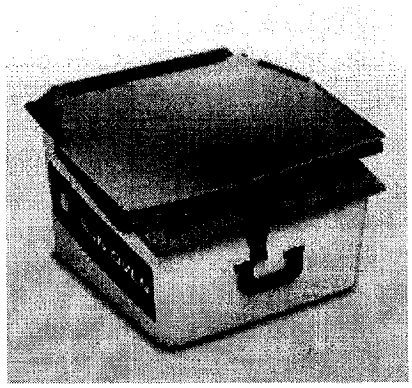
No, but dark, thin-walled pots with lids work best. Dark pots change the light from the sun into heat energy. Lids are important because they hold steam in the pot. If a lid is not used the steam will dissipate much of the heat. Shiny aluminum pots and pans cause light to be reflected out thereby reducing the oven's temperature. Glass casserole dishes with lids also work well. For baking cakes, breads, cookies, and pies, dark cookie sheets and baking tins work best.

## Does food need to be stirred?

No. Stirring to prevent scorching is not required when cooking in a Global Sun Oven due to the fact that there are no hot spots. The temperature of the food rises evenly. It is almost impossible to burn food in a Sun Oven.

## How Is A Sun Oven Like A Kitchen Stove

First off the SUN OVEN reaches an inside temperature of 400 degrees F. on an average sunny day, so most oven dishes in your cookbook are appropriate! Casseroles and stews, roast meats and vegetables, breads and cakes are all easily prepared in a solar oven just like a regular oven. People don't usually cook beans, rice, boil potatoes and grains in their kitchen oven but the SUN OVEN does this best! Legumes requiring many hours of stove top simmering are perfectly tender after several hours under the sun, with minimal attention. Rice and potatoes are cooked taking the same time as usual if the SUN OVEN is allowed to pre-heat.



Stir frying and sautéing are not recommended inside a SUN OVEN. This is not that they can't be done, but because the gentle, uniform heat inside a solar oven greatly prolongs the cooking process and the sealed cooking chamber makes the reduction of sauces difficult. Stove top cooking concentrates heat on the bottom of the pan, allowing rapid evaporation of cooking liquid but risks scorching. The cooking chamber inside the SUN OVEN is tightly closed and moist so vegetables need no cooking water. Meats and poultry need no oil to prevent sticking, making the SUN OVEN perfect for low fat diets! The technique of brazing, or the slow simmering of vegetables or meats in water, broth or wine is a very amiable match for solar cooking.

## To order a Sun Oven for $229 + shipping ($25 less for TACDA members), call TACDA at 1-800-425-5397

(For more technical details, see http://www.sunoven.com.)

# Aquaflex

Made in USA

## Situations where Aquaflex facilities may prove useful

- When normal water supplies are cut off, due to hurricanes, floods, drought, power outages, earthquakes, etc.
- When normal water supplies become contaminated as a result of nuclear/biological/chemical terrorism, toxic chemical spills, viral or bacterial contamination, etc.

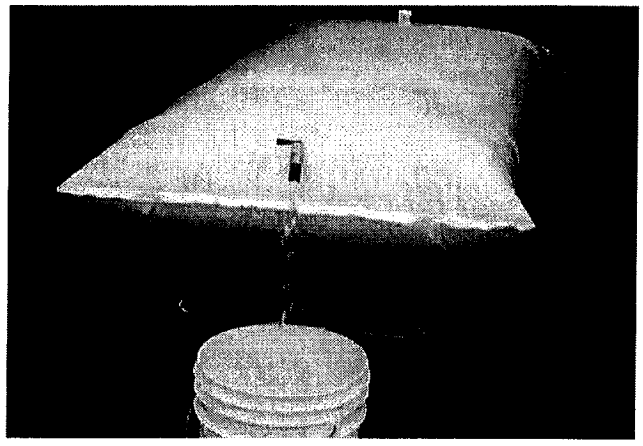
## Aquaflex Emergency Water Storage

Water is probably the most precious commodity after a natural disaster because either water sources are contaminated or water treatment plants are not operating. Storing water can be a problem. Not all containers are intended for food contact and may leach undesirable chemicals into the water. Aquaflex emergency water storage was created to provide a product to store a large volume of water in a food grade container while only taking up a small amount of storage space prior to an actual emergency.

Aquaflex is an economical way to store and transport water in the event of an emergency or natural disaster. Aquaflex emergency water storage is all about being prepared and being more self-reliant.

## Aquaflex Advantages

- Not made from vinyl (PVC), so it won't affect the odor or taste of the stored water. Note: Some similar products in the marketplace use materials that leave a "plastic" taste in the water.
- Constructed of an advanced food-grade material new to the marketplace (Co-extruded Low Density Polyethylene)
- Outstanding tensile, tear, impact, and abrasion resistance
- Excellent water vapor barrier with strong chemical resistance
- Complies with U.S. FDA – Title.21...Code of Federal Regulations.
- Foldable, durable, flexible, and re-useable
- Excellent freeze/thaw ability
- Two openings: A fill fitment with cap and drain fitment with faucet. Large Fill and Drain Openings
- Compact and Easily Stored When Not in Use
- Available in Sizes 30 to 200 Gallons
- Made in the U.S.A.



**See next page for more information and ordering details**

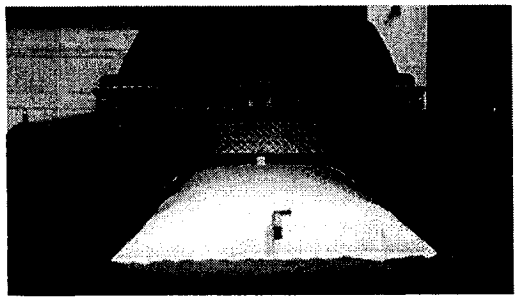
| Capacity | Dimensions | Filled Weight * | Price ** |
|---|---|---|---|
| 30-Gallon | 3' X 3' | 250 Lb. | $35 + $5.95 shipping in the USA |
| 60 Gallon | 3' X 4' | 500 Lb. | $46 + $5.95 shipping in the USA |
| 110 Gallon | 3' X 6' | 917 Lb. | $58 + $5.95 shipping in the USA |
| 150 Gallon | 3' X 8' | 1,250 Lb. | $68 + $9.95 shipping in the USA |
| 200 Gallon | 4' X 8' | 1,666 Lb. | $79 + $9.95 shipping in the USA |
| 250 Gallon | 4' X 12' | 2,083 Lb. | $89 + $9.95 shipping in the USA |
| 350 Gallon | 4' X 15' | 2,916 Lb. | $129 + $9.95 shipping in the USA |

* Do not store Aquaflex in the attic. Remember that water weighs 8.33 pounds per gallon, therefore, a mere 60 gallons weighs just under 500 pounds.

** All pricing subject to change. Shipping charges on up to 110 gallon tanks: $5.95 for one ($3 for each additional tank). Shipping charges on tanks over 110 gallons: $9.95 for one ($4 for each additional tank) Large orders, ask for shipping rate quote.

## How to fill, etc.

The Aquaflex system has two openings, one for filling, and the other, located near the label, for draining. To fill, simply unscrew the cap on the fill opening and fill the tank with a garden hose, through the sleeve. The (red) faucet should be in the off position and screwed on tightly to the drain opening at the opposite end of the bag, near the Aquaflex label. Note: Some similar products in the marketplace do not have a faucet and do not retain their shape once filled with water. Once it is filled with water, replace the cap on the fill sleeve. When the tank is almost full, push against the back of the unit to raise the fill sleeve up higher. This will help you get the maximum number of gallons into your unit. Two people may be required. Or, place the unit on a slight angle making the faucet slightly lower than the fill side. Place your Aquaflex on a clean level surface, which is well supported. If a tarp is placed under the smaller Aquaflex tanks before filling, once filled, they can be moved by dragging the tarp. Do not store outside in direct sunlight unless covered with a tarp. Do not fill to the brim if stored in an area subject to hard freezing (the material does expand some with freezing).



Store your unused Aquaflex in a safe, cool, dry and clean place. If you are reusing Aquaflex, repurify it by swishing it with a mixture of 2 gallons of water and 8 drops of bleach (unscented - and not pool chlorine) and then fully drain. Now you can refill Aquaflex. The purity of the water in Aquaflex is only as good as what you put in it. Contaminated water or suspect water that is not potable should be discarded and not used for cooking or drinking purposes. ***PLEASE NOTE: Wrinkles and creases in the material will not affect performance.*** See www.aquaflex.net/main.html for more details.

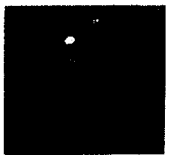
## Limited Warranty

Extra Packaging, Corp. warranties its Aquaflex to be free from defects in materials and workmanship, and to function properly for the manner in which they are intended, for one year from the purchase date. This Limited Warranty will not apply if the liner has been damaged due to abuse, misuse, or misapplication. This warranty extends only to the original purchaser. The company must preauthorize all claims and returns. EXTRA PACKAGING WILL NOT BE RESPONSIBLE OR LIABLE FOR ANY SPECIAL INCIDENTAL OR CONSEQUENTIAL DAMAGES, OR LOSS ARISING FROM THE USE OF THIS PRODUCT.

# To order an Aquaflex, call TACDA at 1-800-425-5397

# Water Barrels, Pails, & Accessories

**Water Barrels, General**: These water barrels are **brand new**, just out of the factory. They are all foodgrade and have non-removable closed tops with two 2" removable caps with a 3/4" pipe thread in one cap. A siphon pump works best on these barrels, but for more precise measurement for water removal, use a lever or push pump. Barrels can be shipped anywhere in the contiguous 48 states. All barrels are UN certified: **UN 1H1/y1.8/.100/98, or better. Barrels come in blue or white colors.**



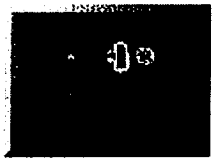
Stock # Bay104-55TBL: Foodgrade, Blue Color, with closed top and two 2" caps. Price: $60 (for non-TACDA members). **TACDA members price: $35 + $17 shipping.**

Stock # Bay102-55TWH: Foodgrade, white color, with closed top and two 2" caps. Price: $60 (for non-TACDA members). **TACDA members price: $35 + $17 shipping.**

Stock # Bay115-30TBL: Foodgrade, Blue Color, with closed top and two 2" caps. Price: $54 (for non-TACDA members). **TACDA members price: $29 + $14 shipping.**

Stock # Bay117-30TWH: Foodgrade, white color, with closed top and two 2" caps. Price: $54 (for non-TACDA members). **TACDA members price: $29 + $14 shipping.**

Stock # Bay159-15TBL: Foodgrade, Blue Color, with closed top and one 2" cap and one ¾" plug.



Price: $49 (for non-TACDA members). **TACDA members price: $24 + $9 shipping.**

Stock # Bay160-15TWH: Foodgrade, white color, with closed top and one 2" cap and one ¾" plug. Price: $49 (for non-TACDA members). **TACDA members price: $24 + $9 shipping.**

| **TACDA Member Prices** | with plain air/water-tight lids | with plain air/ water-tight lids and plastic lid-off tool | with stackable pop-up 1" spout in air/water-tight lid | with stackable pop-up 1" spout in air/ water-tight lid and plastic lid-off tool | pails without lids |
|---|---|---|---|---|---|
| Six 5-gallon white pails (includes shipping in 48 states) | $ 57 | $ 63 | $ 59 | $ 65 | $ 51 |
| Six 6-gallon white pails (includes shipping in 48 states) | $ 63 | $ 69 | $ 65 | $ 71 | $ 57 |

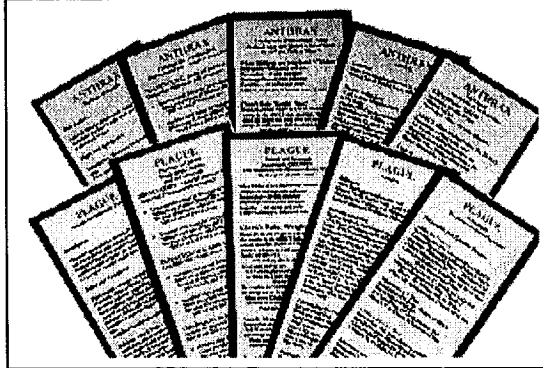
| **Add-on Packages (only with purchase of barrels or pails)** | **Siphon pump (fits all barrels)** | **Aerobic 7 * (2.33 oz) Water Purification** | **Aerobic 7 * (4 oz) Water Purification** | **Metal Bung Wrench** | **TACDA Member Price (includes shipping)** |
|---|---|---|---|---|---|
| **Package A** | √ | | | √ | **$ 39** |
| **Package B** | √ | √ | | | **$ 43** |
| **Package C** | √ | | √ | | **$ 49** |
| **Package D** | √ | √ | | √ | **$ 59** |
| **Package E** | √ | | √ | √ | **$ 65** |

* Kills all disease causing organisms in the water for 5+ years. One ounce purifies approximately 55 gallons

## ANTHRAX and PLAGUE Charts

The Response Charts cover antibiotic prophylaxis (prevention of symptoms) as well as treatment. The Charts contain explicit dosage information covering Doxycycline, Oxytetracycline (Terramycin), Tetracycline, Ciprofloxacin, and Penicillin. The bright red color-coded Charts are plastic-laminated for easy decontamination, and they are waterproof. Each 10" by 20" laminated Chart is composed of five 4" by 10" panels. The Charts are designed to fold into a compact 4" by 10" pocket sized document. The Quick Reference Charts are designed to withstand the rigors of any Mass Casualty scenario. Field expedient, they are light-weight, conform to the body, and are easy to read in low-light conditions. The "Prophylaxis" dosage tables are drawn from numerous documents and military sources including: ***The Journal of Infectious Diseases, The U.S. Army Medical Research Institute for Infectious Diseases, U.S. Army Special Forces Medical Handbook, The Nursing Drug Handbook, U.S. Navy Medical Books, Merck Manuals, Physicians' Desk References*** as well as case studies and other authoritative web sites. The actual figures for the dosage data were presented to Physicians, Pharmacists, Research Workers and other professionals for their feedback. All comments were noted and acted upon if warranted.

The charts have Anthrax info on one side and Plague information on the other. Charts can be ordered from TACDA for $18 (includes shipping and handling.)




**The Hive** is a ready-made shelter for underground storage that can also be used for a storm/tornado shelter. The durable polyethylene material has a 200 year half-life and a 5 year limited warranty*. **The Hive** is a large room where food and water can be stored, and you can leave the riser exposed to access it frequently or bury it completely until needed. Polyethylene is EPA and FDA approved to hold potable water. The polyethylene is ultraviolet stabilized so it will not deteriorate in the sun.

**EASY INSTALLATION**

A backhoe can usually excavate the area necessary and lower the unit in, then hand-compact the soil back in. It's not a big project! **The Hive** is shipped with the riser and hatch inside. The pieces are easily joined using SikaFlex caulking (specially formulated caulking for polyethylene material). **The Hive** has high impact resistance and virtually will not deteriorate. At the same time, the material is lightweight and can be cut, drilled, or welded with ease (weld it using polyethylene strips and a simple propane torch). The high-impact LLDPE co-polymer is extremely tough, non-corrosive, resilient, non-toxic, and lightweight. Weight is roughly 750 lbs. and the unit can be loaded onto a small trailer or pickup truck. The material can be struck with a hand held sledge- hammer without damage. Pressures above the Hive do not bear down directly on the unit, but are transferred to the earth.

**UNIT MEASUREMENT WHEN ASSEMBLED**

- 9.5 ft long, 7.33 ft at its widest point, 7.5 ft at main body height
- Riser projects approximately 38" above the main body

**SITE REQUIREMENTS:** Do not place in areas of high table water. Soil conditions should be stable: not subject to flooding or erosion. When digging the hole, allow at least 12" wall space for foot/hand compacting. Remove all rocks and sharp objects from native soil used for fill. Use a level solid base. Remember, do not use mechanical compaction devices. For optimum backfill set the unit on 5" of pea gravel. This allows any water to percolate out.

If your soil does not readily absorb water or poor percolation exists, heavy rains will tend to collect in the disturbed soil of the unit area. Water underground will tend to saturate the excavated area. A French drain is advised. Hydrostatic pressure on the unit may cause it to raise or alter its position as air wants to rise to the surface. Remember the Hive is a large container of air.

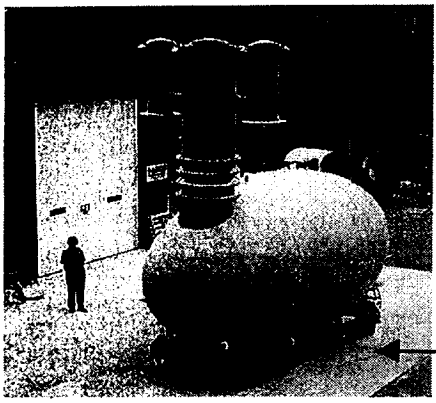
**EXPANDABLE:** The Hive has two arched potential doorways - one to each side. This gives vertical surfaces within the unit but also a way to mate two or more units together by cutting out the inside of the doorways and then bolting the units together. Attachment instructions come with the units. The Hive can be ordered without the riser/hatch. This main body would be completely enclosed and sealed; you must cut out the door opening.

**CUSTOMIZING:** This is a "bare bones unit" and you may wish to add shelves, racks, cabinets, etc. The shelter has been outfitted with areas for 2x4 rafters to give added support and a means to attach a framework for shelves. You may want to vent this unit by using the 6" vent openings - one at the top of the main body and another located under the stairs. These outtakes are designed to easily connect up to 4" plastic ABS pipe.

**SHIPPING and PRICE:** Units come with (28) 5/16" x 1 ½" stainless steel hex bolts, neowashers & locknuts, and 4 tubes Sikaflex. Shipping size L102" x W88" x H90". **PRICE: $1,749** plus shipping (based on your location).

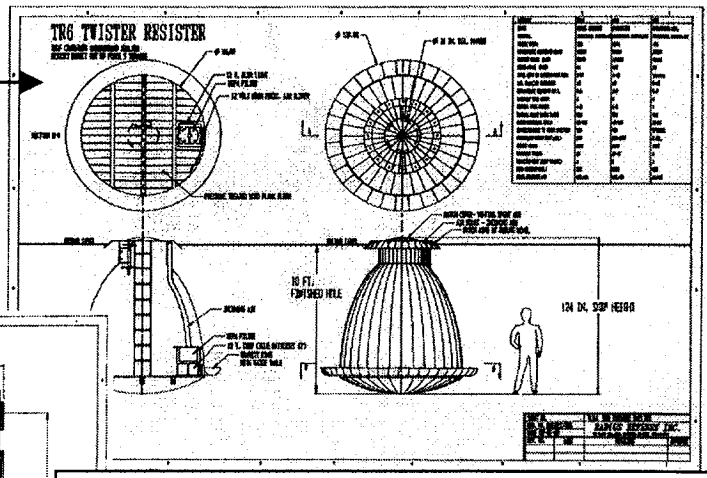
See http://www.psyber.com/biz/thehive/index.html for more information or call Robert Brewer at: ***(530) 272-4574***

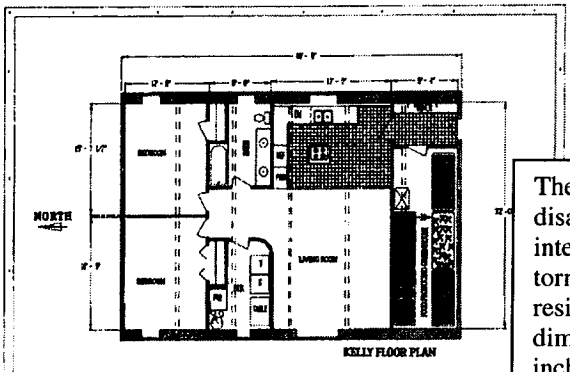
***[Please mention that you heard of the Hive from TACDA] THANKS!***



**The P10** is self-contained 40-150 psi ribbed paraboloid (egg shape) underground shelter designed to protect up to 10 people for long periods or 20 people for short durations such as during tornadoes. The product was specifically designed and developed to protect people during and after disasters such as tornadoes, hurricanes, earthquakes, storms, forest fires, power failures, nuclear power plant accidents, nuclear/chemical terrorism, and full-scale protracted nuclear, chemical and biological war. The P10 is sold in three versions. The **P10 Complete** includes the fiberglass paraboloid structure and a fiberglass: entranceway, hatch, HEPA filter, septic tank, 550 gallon water tank, center floor beam, counter, shower wall, battery housing, carbon filter housing, manual flush up toilet, floor, one dozen 12 volt deep cycle batteries, air blower, fiberglass gray water tank, all wiring, all plumbing, etc. The P10 was developed by Walton McCarthy, M.E., author of *PRINCIPLES of PROTECTION, U.S. Handbook of NBC Weapon Fundamentals and Shelter Engineering Standards.* The book is distributed by The American Civil Defense Association (TACDA). A complete shelter currently costs approximately **$36,800. Call Radius Defense at 603-942-5040 for questions and ordering. Please mention that you were referred by TACDA.**

**TR6 Tornado+ Shelter** - The TR6 Twister Resister was designed as a tornado shelter to withstand a Force 5 tornado traveling directly over the shelter. It can resist flying debris from 200+ mph winds and can be installed in a location where the water table reaches the ground surface. It is designed to resist 20 psi of overpressure and more than an 8.5 Richter earthquake. It can hold six people during disasters and can be configured to handle chemical and biological environments. The TR6 basic package currently sells for **$10,200. Call Radius Defense at 603-942-5040 for questions and ordering. Please mention that you were referred by TACDA.**



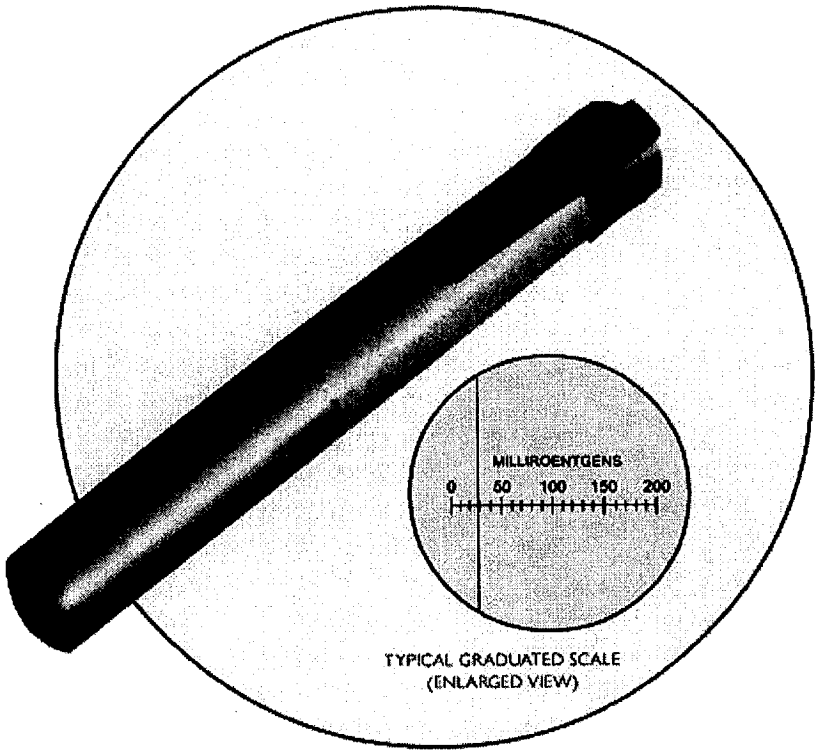




The Bio Arch 32 fiberglass arch house was designed as a disaster and fire resistant structure for those people interested in being more self sufficient and less subject to tornadoes, hurricanes, and earthquakes. The structural fire-resistant structural fiberglass bio arches span 32 feet (inside dimension) with an internal ceiling height of 13 ft- 4 inches. The design of the arch is based on an elliptical curve as opposed to the more common "round" or constant radius arch. The Bio Arch does not use ugly corrugated roofing or siding. The structure is designed to resist wind speeds of 150 mph and 8.5 on the Richter Scale. Cost is roughly $23 per square foot. **Call Radius Defense at 603-942-5040 for questions and ordering. Please mention that you were referred by TACDA.**

http://www.radius-defense.com/main.htm
Radius Defense
222 Blakes Hill Road,
Northwood NH 03261
Tel. 603.942.5040

# Direct Reading Dosimeters

If you are a first responder to a bomb blast, how do you know whether or not there was any radioactive materials present in the blast? If you live in a region near a nuclear power plant or that may be the object of a terrorist blast, how would you know if you needed to evacuate or to take shelter from radioactive contamination? If we are ever so unfortunate as to have a nation, like N. Korea or Iran or China, etc., detonate a nuclear weapon on our soil, how would you know what radiation threat you faced? A personal dosimeter is the simplest and most portable means of determining whether you need to seek protection. It can also help you manage your risk by showing you, in real time, how much exposure you've had and can help you decide how much longer you want to keep working in a warm or hot zone.




These dosimeters can be useful to medical, scholastic, airport x-ray, industry, and military applications. The Arrow-Tech dosimeters are rugged, precision instruments **about the size of a pocket fountain pen**, which are used to measure accumulative doses or quantities of gamma (X-ray) radiation. Arrow-Tech dosimeters are the latest high-tech design by the US government and are used by U.S. government agencies and the military (especially during Desert Storm). They are not effected by nearby electronic devices as some other dosimeters are. A metal clip is used to attach the dosimeter to an individual's pocket or to any available object in an area to be monitored for total radiation exposure. These dosimeters use an extremely sensitive fiber electrometer type voltmeter and a small volume of air to measure the total amount of radiation to which the instrument has been exposed. A reading may be made at any time by merely looking at a source of light through the eyepiece end of the instrument. Dosimeters may be **totally immersed in water** without affecting the instrument readings. These units are ruggedized to operate in harsh military environments.

**See next page for more information on dosimeters.**

## Specifications (Call Arrow-Tech at (701) 477-6461 for technical explanations)

| | |
|---|---|
| Radiation Detected: | Gamma and X-ray from 16 keV to 2 MeV |
| Ranges: | 0 - 200 mR to 0 - 600 R |
| Rugged: | Meets ANSI Specifications N13.5 and N322 |
| Low Leakage: | Measures Background |
| Detector: | Fiber electrometer mounted in an electrically conducting plastic ion chamber |
| Detector Housing: | Very low permeability plastics - hermetically sealed |
| Accuracy: | Within + or - 10% of true exposure |
| Rate Response: | Dose rate independent for gamma and x-radiation |
| Electrical Leakage: | Less than 0.5% of full scale for 24 hours at 50 degrees C |
| Temperature Range: | -20 degrees C to 50 degrees C |
| Relative Humidity: | Up to 90% |
| Dimensions: | Length 4.5 in. (12.4cm), Diameter: 0.6in (1.5cm) |
| Weight: | 1.0 oz. (25 grams) |
| Finish: | Barrell and end caps: Natural matte black<br>Clips: Color coded plastic (color signifies range) or metal clips |
| Warranty: | 2 year limited warranty, manufactured in the United States |

## Range and Model Information*

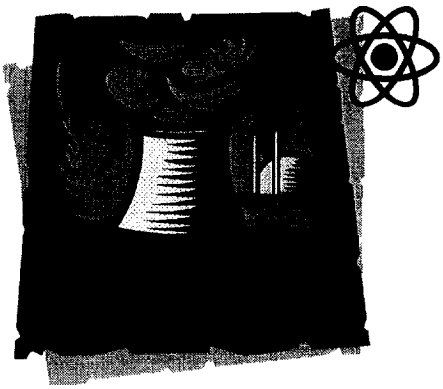
| Low Range Dosimeters | | High Range Dosimeters | |
|---|---|---|---|
| **Range** | **Arrow-Tech Model** | **Range** | **Arrow-Tech Model** |
| **0 - 200mR** | **AT - 138 (measures background radiation)** | **0 - 5R** | **AT - 725(Recommended for those near nuc. power plants)** |
| **0 - 2mSV** | **AT - 138S (measures background radiation)** | **0 - 20R** | **AT - 730 (Recommended for those near nuc. power plants)** |
| **0 - 500mR** | **AT - 500 (good for medical applications)** | **0 - 200R** | **AT - 742 (Recommended for terrorist/war concerns)** |
| **0 - 5mSV** | **AT - 500S** | **0 - 600R** | **AT - 746** |
| **0 - 2Mr** | **AT - 2** | **All models and the charger sell for $99 + $5 shipping and handling [note: TACDA members pay only $74 + $5 shipping and handling]** | |
| **Rate-meter** | **AT – RM (up to 120 R/hr)** | | |
| **Dosimeter charger** | **The Jordan 750-5 Charger** [powered by a 1 "D" cell battery] | | |

* People can normally handle 10 R per day for a few days with no long-term side effects. For a small percentage of people, exposures of 200 R to the whole body in a day may prove lethal if no medical help is available (though the person would not normally die for several weeks). At 350 R, perhaps 5% of the exposed group would die within a month. At 450 R, half of the exposed group would probably die without medical attention. At 650 R, most would die without intense medical care.

Before dosimeters can be used to measure gamma radiation, the self-contained fiber voltmeter and ion chamber (electrometer) must be charged to approximately 165 volts D.C. with the central charging pin being positive in respect to the barrel. Most all available dosimeter charging units may be used to charge dosimeters. Charger electronic circuitry provides the proper adjustable output voltage and polarity required.

If you purchase a dosimeter from TACDA, we will ensure the unit has been charged and you can also receive free recharging years from now by simply sending it back to us for a recharge (minus minimal return shipping charges). A charge on one of the high range units should last for years. If you want a charging unit, contact us for more details.

**Call TACDA at 1-800-425-5397 to order the dosimeters listed above.**



# Do you live within a few hundred miles of a nuclear power plant?

## If so, you can take action to protect your family (see next page)

If there was an accident or sabotage at a nuclear facility near to you, you and those who live around you could be in serious danger. If there was a meltdown as occurred at Chernobyl, people within hundreds of miles of the plant could be in danger and need to take actions rapidly to protect their families. And while many feel that this could never happen in America, the following article, written a few years ago by James Riccio, should help to clarify some of the issues.

### *CHERNOBYL: ... YEARS LATER AMERICA IS STILL IN DENIAL*

On April 26, 1986, a nuclear reactor in the Soviet Union exploded and the word 'Chernobyl' was seared into the consciousness of people around the world. Ten years have passed and we have yet to glimpse the consequences of the disaster. The most reliable figures available to date already establish Chernobyl as the worst technological accident in the history of humankind.

The U.S. nuclear industry and the agency that regulates it have learned little from this disaster. The immediate response to Chernobyl was to belittle the Soviet design and to claim that the accident could not happen at a U.S. nuclear reactor. While technically correct -- there are no Soviet designed reactors in the U.S. -- the industry's denial missed the point.

Nuclear accidents with consequences comparable to that of Chernobyl are possible at U.S. reactors. During the political fallout that followed the disaster, the Nuclear Regulatory Commission testified before congress that there is about a 45% chance of a core melt accident somewhere in the U.S. in the next 20 years.

Nuclear utility executives claimed that U.S. designed reactors had containment structures to prevent the release of radiation and that the Chernobyl reactor had no containment. This difference in designs is often cited as the reason Chernobyl could not happen here. This second denial, too, is incorrect. NRC Commissioner Asselstine testified before Congress that Chernobyl had a containment structure that was stronger than those surrounding some U.S. nuclear reactors. The Chernobyl containment design was based upon the theory of pressure suppression containment. This same concept is used in nearly half the reactors in the U.S., 38 designed by General Electric and 9 designed by Westinghouse. According to the NRC, GE Mark I designs have a 90% chance of containment failure during a core melt accident. The NRC has acknowledged that the containments are not designed to cope with such accidents. If a meltdown occurs, containment failure and the release of radiation into the environment can not be ruled out for any of these designs.

By denying that a 'Chernobyl' could happen here, the nuclear industry has denied itself the opportunity to learn from this tragedy. One of the most poignant lessons of the disaster comes from the children of Chernobyl. The thyroid cancer rate in Belarussian children has increased 100% since the accident. Health officials expect the cancer rate to continue rising since pre-cancerous thyroid conditions are more common than carcinomas. These effects could have been mitigated by the distribution of potassium iodide, an inexpensive drug that protects the thyroid from radiation.

The nuclear industry is well aware of the usefulness of potassium iodide. Many nuclear utilities store it at the reactor site to distribute to workers in the event of an accident. While providing potassium iodide for their workers, the industry has blocked attempts by the NRC staff to provide the same protection to the public. Nuclear industry officials have argued that such a policy would adversely affect the public's confidence in nuclear power. They have chosen perception over protection and have persuaded the Nuclear Regulatory Commission to do the same.

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James Riccio is the staff attorney for Public Citizen's Critical Mass Energy Project.
www.citizen.org/CMEP/nuclearsafety/043096oped.html

**See the next page for some ways to protect your family.**

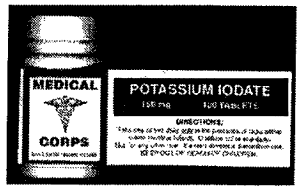
Radioactive iodine can be released into the atmosphere as a result of a nuclear explosion or with a nuclear reactor meltdown, such as occurred during the Chernobyl incident. US Nuclear Regulatory Commission (NRC) reports show that a major radiation release could injure thousands of people and millions could potentially be exposed to dangerous long-term health effects resulting from radioactive iodine. Children are extremely susceptible to radioactive iodine.

Taking Potassium Iodide or Potassium Iodate pills can protect against radioactive iodine poisoning by "filling" the thyroid with these harmless substances for a period of time long enough to allow the dangerous radioactive iodine to not be absorbed and then to naturally dissipate from the area. Up to 99% of all radiation induced thyroid damage can be prevented by taking Potassium Iodide or Iodate pills. For some excellent websites that discuss these issues in detail, see: www.medicalcorps.org/special1.htm and www.anbex.com/index.htm.

# Potassium Iodate: A Better, Less Bitter Solution than Potassium Iodide.

Potassium Iodide (KI) has become more expensive during the past few years. At times the demand outstrips the supply. Potassium Iodide has another downside ... it is extremely bitter. In discussions with victims of Chernobyl, they emphasized the trouble they had in getting their children to take the powder or pill versions of this formula because they just couldn't keep it down. In one case, a woman related the story of how her child died of thyroid cancer since her child would not take Potassium Iodide because it was too bitter. Chuck Fenwick, a retired Corpsman, and founder of Medical Corps, spent time discussing this problem with chemists at an American pharmaceutical company. The solution that was offered by the chemists was to use Potassium Iodate (KIO3). The loading of the thyroid will still take place and this tablet is chewable and not as bitter to make sure that children will be able to take it.

The Potassium Iodate that TACDA offers is in 150mg dosage instead of 130mg typically found with Potassium Iodide. Our bottles contain 100 tablets instead of the 7 bottles of 14 associated with Iodide. This packaging also helps keep the costs down. The label on each bottle contains dosage information (an adult would typically take 1 pill for at least 14 days – a child would take ½ a pill/day).

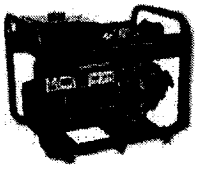



Another major advantage of Potassium Iodate is that it has an extremely long shelf life compared to Potassium Iodide. Unopened, the Potassium Iodate should still be effective for decades.

| Potassium Iodate (Offered by **TACDA**) | Potassium Iodide (Offered by many) |
|---|---|
| Less expensive: $16.95* + $4 shipping/ handling (100 tablets, 150 milligrams) | More expensive: Typically $24 + shipping (98 tablets, 130 milligrams) |
| Long Shelf-life: Indefinite (decades) | Shelf-life: Degrades over time. Should be replaced within 3 to 5 years. |
| Taste: Pill is chewable, not too bitter. | Taste: Bitter. Some children cannot keep it down or are unwilling to take it. |

* Less for large orders

**To order Potassium Iodate, call TACDA at 1-800-425-5397**



# Electrical Generators

What would you do if the power grid goes down? Will you be in the dark? If you get your water from a well, if you don't have backup power, you won't be able to get a drink of water or flush the toilet. How about heat in the winter? Natural gas, heating oil and propane furnaces won't work without electricity! Get prepared! Buy now before the prices go up and the availability goes down.

Are you looking for a generator that your life can depend on?

The generators that *Yellowstone River Trading* (YRT) offers are made to be used in the worst environments. Are you looking for a generator that will operate reliably for 20,000 to 25,000 hours? YRT sells Yanmar, Kobota and Duetz diesel powered generators from 4 kW to 150 kW. These are the best industrial generators in the world. They easily outlive a gasoline or propane engine by three times and they produce superior efficiency and fuel economy! The generator ends are only the best and all components are over built to insure reliability and durability. When the power goes out, nothing beats a diesel generator!
The last reason to deal with YRT is that they know a lot about making power.
They can help you figure our what you really need. Most people don't know how to size a generator. They want you to have a generator that you are going to be happy with, a generator that is going to work well for you when you need it.

YRT also carry larger propane and diesel generators and DC battery chargers. These units are available in ranges from 8-300 kW. YRT also offer LifeLine Industrial Batteries and Inverters.

Contact ***Yellowstone River Trading*** for data and price sheets on these units. (800) 327-7656. Please let them know that you were referred by TACDA. Thanks!

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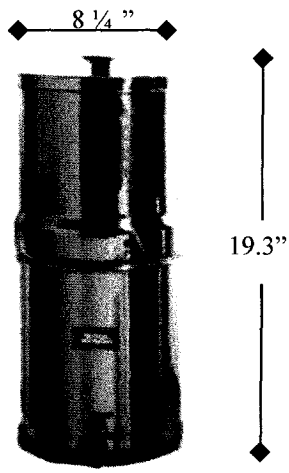
## TACDA Bookstore Items[1]:

| | |
|---|---|
| ***Making the Best of Basics*** **by James Stevens** [300+ pages of practical information on in-home food and water storage, wheat cooking, triticale cooking, powdered milk, honey, self-health, sprouting, drying fruits and vegetables, fuels storage and a compendium of preparedness resources, both governmental and commercial.] | **$17.95 + $5 shipping in USA** |
| ***Don't Get Caught with Your Pantry Down*** **by James Stevens** [500+ pages. Profiles of 5,000+ US and Canadian businesses providing emergency and preparedness products and services] | **$26.95 + $6 shipping in USA** |
| ***Principles of Protection – US Handbook of NBC Weapon Fundamentals and Shelter Engineering Design Standards*** **by Walton McCarthy** [400+ pages of charts, diagrams, specifications and statistical data, you would have a very difficult time locating a more complete and detailed reference resource] | **$34.95 + $6 shipping in USA** |
| ***No Such Thing As Doomsday – Underground Shelters – How to Prepare for Earth Changes, Wars and Other Threats*** **(1996 version) by Philip L. Hoag** [300+ pages. Makes complex information understandable, and brings engineering concepts down to earth where they can be comprehended and applied. Provides the prospective shelter builder with the information he/she needs for making intelligent and sound decisions. **Good info on various shelter types and pros and cons.**] | **29.95 + $5 shipping in USA** |

[1] TACDA does not necessarily endorse all of the information provided in these books (for example, some information is known to be dated).

# British Berkefeld®
# Emergency Camping Filter

**"The Original Gravity Filtration System"**




- **Used by Thousands of Missionaries Around The World**
- **No Water Pressure or Pumping Required**
- **High Tech Ceramic (with Silver + Carbon) Filter System**
- **Time Tested for Over 140 Years**

This filter is the old man on the block with a history dating back to the early 1800's. The **British Berkefeld®** Emergency and Camping Water Filter system is designed for use in situations where a reliable supply of treated drinking water is unavailable. Unbelievable as it sounds you can actually pour creek water in this filter and a short time later have clean, good tasting water. How? The pore structure of the ceramic filters inside is designed to remove very fine particles and bacteria. Can be used camping or where there is no municipally treated water. The gravity feed system also works when water pressure is too low for other filters.
Takes minutes to assemble and can provide from 12-24 gallons of safe drinking water each day. Constructed of high grade, polished stainless steel making it hygienic, durable and easy to clean. The two piece housing is portable and can be used virtually anywhere, anytime. The upper chamber is filled with water which gravity feeds through the filters into the lower chamber. An easy to turn On-Off spigot is used as the outflow tap. The "Super Sterasyl" filters reduce up to 99.99% of particulates, cysts, parasites and pathogenic bacteria including but not limited to E. Coli, Cryptosporidium, Giardia and Salmonella Typhi. Additionally, these filters will reduce chlorine, rust, sediment and organic chemicals. With nominal particulate filtration rating efficiencies of > 98% down to 0.2 microns (Spectrum Labs), > 99.9% at 0.5 microns, and > 99.99% at 0.9 microns making this one powerful filter system. The latest designs of Doulton® filter elements (used in the Berkefeld) incorporate pure silver impregnated into a porous ceramic outer shell [80,000,000 pores] that can trap bacteria down to as low as .22 of a micron in particle size [1/100,000 of an inch]. Laboratories consider a filtering medium with an effective pore size of .01 micron to .45 micron to be *bacteriologically sterile* and .45 micron to 1.0 micron to be *bacteriologically safe*. The durable ceramic filters can be cleaned over and over with a soft brush or Scotch Brite pad and the filter media in this product contains an effective antimicrobial agent. Regrowth of bacteria that becomes trapped either on the outside of the element or in the ceramic's pores is controlled by the silver which, on contact with water, releases small quantities of positively charged metals ions. These ions are taken into the enzyme system of the bacteria's cell and thereby neutralize it. Each filter element will provide efficient filtration from 2,600 gallons to 15,000 gallons depending on water quality. The flow rate of the ceramic filter can be easily renewed by simply brushing its outer surface under running water. As the top layer of ceramic and the contaminants are brushed off and flushed away, a new layer becomes available. **This process can be repeated dozens of times before the ceramic material is exhausted.** Inside the Ceramic shell is a post filter which is manufactured by using a treated granular carbon to form a tightly packed matrix. This post filter provides Chemical Reduction of chlorine, pesticides, solvents, etc. Detailed easy to assemble and operating instructions are included. New Millennium Concepts offers a 30 day money back guarantee *(excluding shipping)* and warrants each new water filter against defects on materials or workmanship for a period of one (1) year from date of purchase, and agrees to replace any part(s) found to be defective without charge.

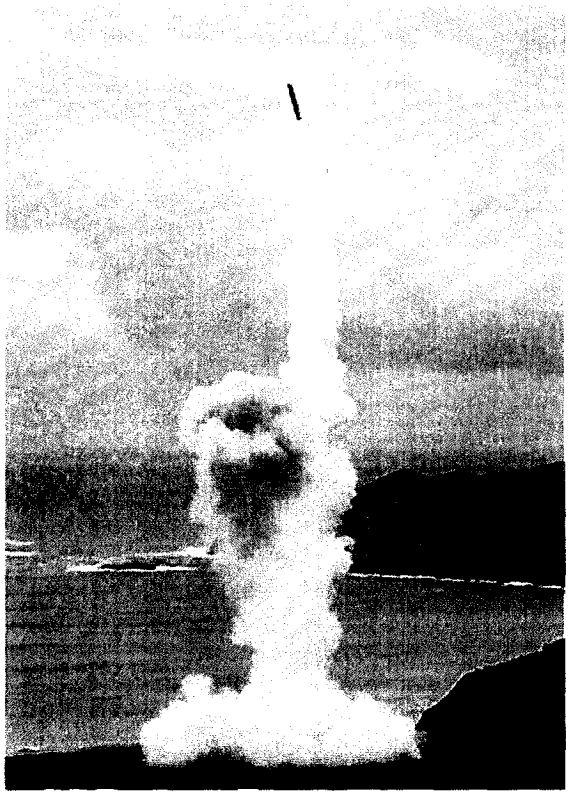
- **SS-4x2: 2-filter system Only $199.00 (Filters about 1/2 gallon per hour)**
- **SS-4x4: 4-filter system Only $259.00 (Filters about One gallon per hour)**

Shipping charges are $10 per unit 47 states (not available in Iowa)

**Call TACDA at 1-800-425-5397 to order!**

Doulton® water filters (used in the Berkefeld) have been available in the United States since since World War II and certified by the National Sanitation Foundation [N.S.F] under Standards 53 and 42 for specified products and claims:

- Health Effects, Turbidity Reduction,
- Cyst Removal, Self Sterilizing
- Particulate Reduction,
- Taste and Odor Reduction and are the only ceramic filters available today to be certified under both of these standards.



The LGM-30 Minuteman intercontinental ballistic missile is an element of the nation's strategic deterrent forces. The "L" in LGM is the Department of Defense designation for silo-launched; "G" means surface attack; and "M" stands for guided missile. The Minuteman is a strategic weapon system using a ballistic missile of intercontinental range. Missiles are dispersed in hardened silos to protect against attack and connected to an underground launch control center through a system of hardened cables. Launch crews, consisting of two officers, perform around-the-clock alert in the launch control center. A variety of communication systems provide the National Command Authorities with highly reliable, virtually instantaneous direct contact with each launch crew. Should command capability be lost between the launch control center and remote missile launch facilities, specially-configured EC-135 airborne launch control center aircraft automatically assume command and control of the isolated missile or missiles. Fully qualified airborne missile combat crews aboard airborne launch control center aircraft would execute the NCA (National Command Authorities) orders.

# *Are You Ready?*

If Unsure √

# Check this box.

Join the American Civil Defense Association (TACDA)...
... and help **promote sensible precautions to disasters**.

An annual membership includes a year's subscription to the *Journal of Civil Defense* plus discounts on purchases at the TACDA Store (see back of Journal).
Annual single family rate: $ 25
Annual organization rate: $100

If you prefer, you can just receive the Journal for $25 and not be entered on our membership list ... note however, that TACDA will not give our membership list to any other organization. Non-US rates are higher due to postage.

Please also consider giving a tax-deductible donation to TACDA if you want to help support our mission of:

- Alerting the public to dangers
- Assisting the public in making reasonable preparations
- Advocating things such as preparations for Y2K, bio-terrorism, and an effective 50-state missile defense

Sign up by contacting:

**TACDA**
**P.O. Box 910, Starke, FL 32091**
**Tel: 800-425-5397**
**Web: www.tacda.org**

***Journal of Civil Defense***
**The American Civil Defense Association**
**P.O. Box 910**
**Starke, FL 32091**

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