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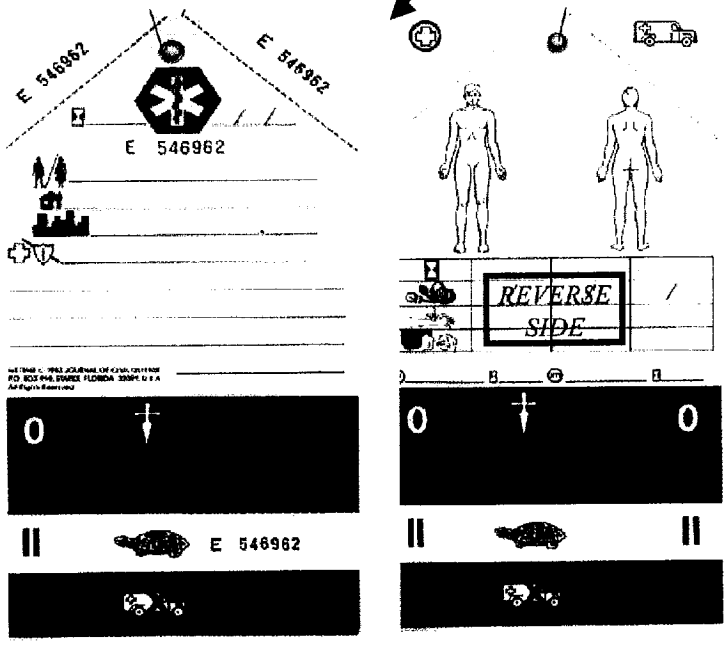

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To our readers ...

This issue of the *Journal of Civil Defense* leads off with a technical, but very strategic article on why the proposed **National Missile Defense** system may be far less than effective.

A second series of articles covers some developments within the **biological warfare** arena, to include a possible **new agent that kills anthrax** and may effectively protect people and cleanse contaminated areas.

Other articles address the powerful **Oklahoma and Kansas tornadoes** that killed over 40 people and how the National Guard and NOAA help in crises like these. In addition, a related FEMA article is included that talks about how to obtain plans for a **tornado "safe room"** in your home.

A final article addresses the need for community preparedness related to the Y2K computer problem. In this article, **Paloma O'Riley discusses the problem of "happy talk" from government and corporate America.**

For those who are awaiting the **second in the series on practical preparedness and the Y2K Challenge, this is planned for the next edition of the Journal** (but will be posted to the web as soon as it is available).

TACDA recently updated its web site to include the beginnings of a Civil Defense Library and includes other areas such as Upcoming Events, The TACDA Store, and extensive links to related sites. This site also contains a complete copy of the Journal. (see www.tacda.org)

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). Kevin Briggs, President; Kathy Eiland, Executive Director. The TACDA Board also includes Ed York, Sharon Packer, Frank L. Williams, Bron Cikotas, Nancy D. Greene, and Regina Bass. Walter Murphey is the Editor Emeritus of the Journal.

Effectiveness of Proposed National Missile Defense (NMD) against ICBMs from North Korea

By Richard L. Garwin March 17, 1999

[Editor's note: TACDA does not necessarily endorse all of the views presented below. However, TACDA does believe this article brings up key points about NMD countermeasures, biological bomblets, and ship-based interceptors that warrant policy consideration. Note too that the Russians have several ground-based NMD systems – but chose to go with nuclear warheads rather than hit-to-kill. Perhaps the U.S. should consider using nuclear warheads on ground-based interceptors and reserve using hit-to-kill mainly for boost phase intercepts.]

Richard L Garwin
Member, Rumsfeld Commission

The NMD system under development by the Defense Department, according to Lieutenant General Lester L. Lyles, USAF, Director of the Ballistic Missile Defense Organization (02/24/99) "would have as its primary mission the defense of all 50 states against a small number of intercontinental-range ballistic missiles launched by a rogue nation." But General Lyles goes on "Such a system would also provide some residual capability against a small accidental or unauthorized launch of strategic ballistic missiles from China or Russia. It would not be capable of defending against a large-scale, deliberate attack."

A Deployment Readiness Review is to be held in June 2000 to "assess whether or not the technical progress has been made which would allow more senior decision-makers to decide whether or not we should commit to deployment," which decision would be made apparently at about the same time.

But the United States should not commit to deploying a system that will not do the job. First, the job against North Korea or other emerging ICBM threats, possibly from Iran or Iraq.

In this regard, the nation should heed the CATO Institute Foreign Policy Briefing No. 51 of 02/11/99, "Rather than throw money at the program – as would some conservatives to whom missile defense is a religion – or completely avoid the missile defense issue – as would some liberals enamored with arms control for its own sake —the best policy is to honestly assess the nature and extent of emerging threats and develop a national missile defense system at a pace that the technology can support and that test results will bear out. No matter what the threat is, rushing to develop a system that fails to work is not an attractive remedy."

Unfortunately, the proposed NMD system would have essentially zero capability against the most likely emerging threat – an ICBM from North Korea. And it would have strictly zero capability against the much more realistic and important threat from North Korea, Iran, or Iraq – short-range cruise or ballistic missiles fired from merchant ships near U.S. shores, a nuclear weapon detonated in a harbor, or biological warfare agent (BW) disseminated in the United States or from a ship in harbor. We will not solve our real national security problems so long as our primary concern is to deploy a system that will not handle the threat that is cited to motivate its deployment. While the U.S. might be threatened to some extent by propaganda leaflets delivered by ICBM, and somewhat more by chemical weapons as an ICBM payload, real strategic-level damage would be inflicted only by BW and by nuclear payloads.

As described by General Lyles, the NMD system is intended to use a ground-based interceptor launched from a site from within the United States (North Dakota or Alaska) to strike reentry vehicles above the atmosphere. With North Korea as an example, in order to be specific, these ICBMs would have been launched toward the North in order to fall on the United States. The rocket launch flame will be detected by the Defense Support Program (DSP) satellites in geosynchronous orbit within considerably less than a minute after launch, and an approximate location of the launch site and a direction of the missile is established in that way.

The upgraded ground-based early-warning radars would some minutes later detect the threat missile and on the basis of these data confirming the DSP information, interceptors would be launched. While the interceptor is in flight, a ground-based X-band radar with better resolution will track the reentry vehicles and to some extent discriminate them from other objects put into space by the missile (perhaps intentional decoys, certainly other parts of the missile) to guide the interceptor close enough to the target missile for the interceptor's sensor to acquire the warhead and "to discriminate the warheads from potential decoys." Several interceptors would need to be launched at each warhead in order to achieve the NMD requirement to have high confidence in no ICBM warheads impacting on U.S. soil. If the system works as stated.

In July 1998, the nine-member Rumsfeld Commission to Assess the Ballistic Missile Threat to the United States (on which I had the privilege to serve) issued its unanimous report, judging that North Korea could have a true (but unreliable and inaccurate) ICBM within a couple of years-- specifically within five years of a decision to move forward with a program, assuming that it is thoroughly funded with a high priority. The Rumsfeld Commission also advised that there were other and earlier threats from missiles of shorter range launched from ships, and observed also that BW or CW agents could be packaged in the form of bomblets released early in flight, that would fly separately to the target region.

It is just this last caution which I elevate to the status of a likelihood. It is far more effective militarily for an ICBM payload of biological warfare agents to be arriving in the form of individual reentry vehicles (bomblets) spread over an area 10 or 20 kilometers in extent, rather than to be delivered as 100-500 kg of BW agent at a single point in the target area. Under the latter condition, a very narrow plume will be produced by wind-born BW, threatening people within the narrow plume. But if the same payload were dispersed in the form of bomblets, a large number of such narrow plumes, each equally lethal within its interior, would threaten people in the target area.

Given this undisputed increase in military effectiveness, any nation with the capability to make an ICBM and reentry vehicles would almost surely arrange to package the BW in the form of bomblets, released just as soon as the ICBM reached its final velocity on ascent. Placing the bomblets at predetermined positions in a rack within a spinning final stage, the release of the bomblets would then allow them to spread during their 20-minute or more flight to reentry, with the initial rotation rate determining precisely the spread, and the pattern being that in which the bomblets were stored in the missile. **This threat of BW bomblets released on ascent is to be expected whether or not a defense is deployed, but the proposed NMD would have strictly zero capability against these bomblets.** First, there would be so many of them (with a loading of perhaps 1 kg of agent per bomblet) that it would exhaust any planned number of interceptors. Second, even with a thousand or more interceptors, it is all too easy to have each bomblet in a loose-fitting and lumpy shell, just in order that the ICBM could have deployed a vastly larger number of empty such shells. This is an example of the great utility of "antisimulation", in which the warhead itself is modified to make it easier to simulate by a cheap and convenient decoy.

If North Korea should manage to obtain fissile material either from its own reactors or from abroad, so as to make a nuclear weapon that could be carried to intercontinental range by an ICBM, it would initially have what is probably an unreliable warhead on an unreliable missile. The warhead would be likely to miss its city target entirely. But would a defense make any difference? Yes, if the launching country cooperated, but not if it wished to prevent the intercept of its nuclear warhead.

Because the NMD interceptors are all "hit-to-kill" so that they must collide with the warhead in order to destroy it, the attacker need not conceal the existence of the warhead but only its exact location. This is readily done by the use of an enclosing balloon made of aluminum-foil coated mylar that can be put together by anyone who buys this article of commerce and spends $20 on a hand-held tool for heat sealing the plastic to make a large balloon. **Even a balloon ten meters (33-ft.) in diameter, inflated after the RV separates from the missile, would render it unlikely that an interceptor would actually strike the warhead rather than plunging harmlessly through the balloon.**

The balloon would be inflated in space by a tiny charge of gas-generating compound like that found in every automotive air bag, but instead of deploying in a 100th of a second or less, the balloon could deploy in a second. Since the launch country might fear that the interceptor striking the balloon might cause sufficient disruption to expose the RV, several balloons in sequence could be shrunk down on the RV (and would occupy very little space with the air removed by an ordinary vacuum cleaner). So each would be ready for deployment to hide the RV once again in case the balloon was intercepted.

Alternatively, the launching country could deploy ten or more such balloons over a region 10 km or more in extent, so that these would need to be attacked one at a time. Even the dynamics of a balloon bouncing around over an enclosed object could be simulated in the decoy balloons with an enclosed object that weighed extremely little in that case-- a heavier, small balloon just big enough to enclose the RV.

The interceptor would normally track the RV by means of its infrared (heat) emission and it could readily distinguish an empty balloon from a balloon containing the RV, simply because the empty balloon would be colder, while the RV would not have had time to cool off during its 30 minutes or less of flight. But highly reflective aluminum not only reflects light (and infrared) but it correspondingly radiates a lot less-- about 30 times less than does an unprepared surface. Furthermore, multi-layer insulation is an article of commerce that can reduce the emitted heat by another factor 50 or more. **Finally, if the decoy maker wished to have even greater confidence that sensors would not be able to discriminate the decoy balloon from the balloon containing the RV, a small chemical heat source could be used to mimic the 40 watts of heat that would be emitted by the reentry vehicle shrouded in multi-layer insulation within its own balloon.**

These achievements are easy relative to the scale and cost of the effort required to develop an ICBM, and if a country expects the United States to have this NMD at the time of its first ICBM, then I am confident that these countermeasures can and will be provided.

But how about the observation that the NMD "would also provide some residual capability against a small accidental or unauthorized launch of strategic ballistic missiles from China or Russia." This is not just an "observation"; I believe it is a requirement. It is a very strange formulation for a requirement; "the system should provide ..." or "the system must provide ..." would be more usual. So it is a requirement masquerading as an observation. As such, it is sure to provoke decoy responses that will vitiate the system, so long as China and Russia maintain weapons with the intention of striking the United States either in response to a U.S. strike on their territory or otherwise.

The extension of the deployment date of NMD from 2003 to 2005 would not help to improve the effectiveness of the system. It might reduce the risk of deploying some kind of system that would work against a cooperating threat from "extremely high risk" (as the 2003 deployment has been characterized by General Lyles) to "very high risk", but it would not solve these problems. I believe that no deployment decision should be made (and less development money should be spent) until one has a proposed system that can cope with the threat.

BMDO has a structured program for considering countermeasures, which has the result that effective countermeasures are not considered until a system of defense is available to counter them. But as Churchill once observed, "Occasionally it is necessary to take the enemy into account."

The U.S. is not helpless against these threats. It can and has done a lot to deter the development of the threat, the deployment of such capabilities, and even the use of deployed capabilities. Of course, showing great fear and concern simply raises the bargaining value of one or a few ICBMs in North Korea, Iran, or Iraq. Certainly in North Korea they are vulnerable to preemptive strike by non-nuclear means, and, once used, any remaining weapons would almost certainly be struck by nuclear weapons.

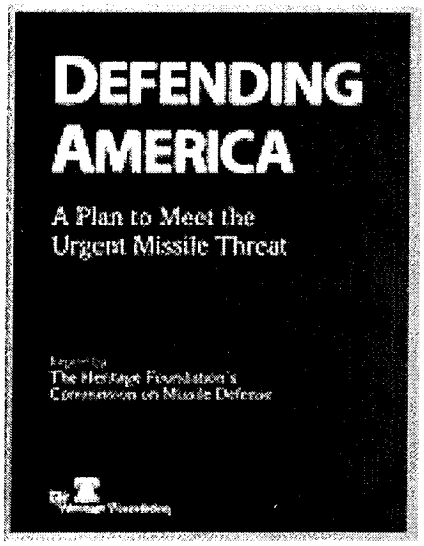
Against BW, passive protective means can do a lot-- by maintaining positive pressure of filtered air in homes, business, and factories, either at all times or on warning of attack. With ICBM delivery, we would know where and when reentry took place, and with proper planning and investment could counter not only the threat of BW delivered by ICBM but also by short-range missiles or even by dispersal from a car or truck.

Finally, it is entirely possible (especially with North Korea's launch of ICBMs) to destroy the weapons by intercept in boost phase-- while the first, second, or third stage of the ICBM is still burning. DSP (or beginning in 2004 its successor, the Spaced-Based Infrared System-- SBIRS-high) would provide data accurate enough so that no radar would be necessary or any other aid to the interceptor. But the interceptor would have to be launched from a site sufficiently close and have sufficiently high performance in order to reach the missile while it was still burning. Furthermore, the interceptor could not simply home on the flame but in the late stages of intercept would need to look "ahead" of the flame, in order to strike the solid missile and not sail harmlessly through the tenuous flame. This could be done either by blind reckoning because of the known shape of the flame, or by actual detection of the solid missile with a proper design of the interceptor seeker.

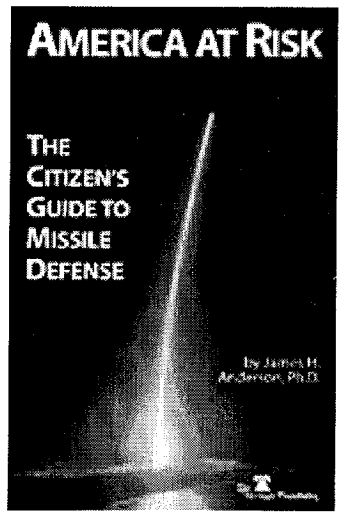
Because of the vast ocean area east and north of North Korea, North Korean ICBMs aimed at the United States are an ideal target for ground-based boost-phase intercept. Specifically, it should be possible to use an interceptor of the same gross launch weight as the GBI of the NMD program (about 14 tons, with 12.5 tons of solid fuel) to boost the kill vehicle (of perhaps 60 kg mass and containing some 15 kg of liquid fuel) to a speed similar to that of the ICBM-- 7 km/s, but with larger engines relative to the mass, so it will reach its final speed more rapidly. A simple calculation shows that the sea-based interceptor could be deployed as much as 2100 km downrange from the launch site and still be able to catch the ICBM while it is still burning. We assume a burn time of 250s to ICBM speed of 7 km/s (an acceleration of three times that of gravity-- "3 g") while the interceptor receives 7 km/s in 100 seconds, so an average acceleration of 7 g. Because the interceptor must rise vertically in the lower atmosphere, it probably moves only about 250 km toward its target while it is burning, and then in the remaining (250-100) seconds moves some 1050 km. So in the burn time of the ICBM, the interceptor can reach out a total of 1300 km from its launch site. The ICBM at an average speed of 7/2 = 3.5 km/s into 50s moves no more than 875 km from its launch site. The interceptor could be deployed as much as 1300 km (to be practical, use 1100 km) east or west of the ICBM trajectory, about 800-1000 km downrange. So there is plenty of room for U.S. navy ships to carry these interceptors. The ships need have no missile-tracking radars.

Such a sea-based boost-phase intercept system is not compliant with the 1972 ABM Treaty, but Russia and the three other parties to the Treaty might well agree to a specific exception, especially if this were combined with progress on lower missile levels in Russia and the United States. ***Ω JCD***

[Note: This article is part of a larger archive of Garwin articles at http://www.fas.org/rlg/990317-nmd.htm or by visiting the TACDA website at http://www.tacda.org/technica.htm]



See http://www.heritage.org/missile_defense for the Heritage Foundation's proposals for a viable National Missile Defense



See this Heritage Foundation site for more information on the threat and missile defense options: http://www.heritage.org/missile_defense/citizens_guide

Biological Weapons and Vaccines

By Dr. Jane Orient

[from the *Doctors for Disaster Preparedness Newsletter*, March 1999]

Because of the threat of biological warfare, the U.S. military plans to vaccinate 2.4 million personnel against anthrax. A number of soldiers are risking court martial rather than accept the vaccine because of concerns about safety. Some believe it may be related to the Gulf War Syndrome *(USA Today* 1/26/99).

On the other hand, some civilians are asking questions about how to obtain the vaccine because they wish to protect themselves against a highly fatal disease, which has unquestionably been weaponized by many possible antagonists.

The anthrax vaccine was licensed in 1970 on the basis of one published study, with only five inhalation cases. Animal studies have shown survival rates as low as 4% and as high as 100% after anthrax challenge. A 1994 Staff Report for the Committee on Veterans Affairs is quoted as saying that "its [the vaccine's] safety, particularly when given to thousands of soldiers in conjunction with other vaccines, is not well established" *(Lancet* 351:657, 1998, quoting a ProMED-mail posting). The one U.S. producer, Michigan Biologic Products Institute (now Bioport Corp.), would have closed last year except for a last-minute plea by the Pentagon.

Textbooks of military medicine and *The Medical Letter* (40:52-53, 1998) state that the anthrax vaccine is "safe and effective." The British secretary of state for defence was vaccinated on camera in an effort to convince service personnel and the public of the vaccine's safety. However, several epidemiologists at the University of Bristol described the state of current thinking as one of "clinical equipoise" and recommended randomizing troops to receive or not receive vaccine *(Br Med J* 316:1322, 1998). Certainly, there is a need to develop a better vaccine. *Harrison's Principles of Internal Medicine* states: "The current vaccines are impure and chemically complex, elicit only slow-onset protective immunity, provide incomplete protection, and cause significant adverse reactions."

The vaccine is not completely protective against all natural strains of *Bacillus anthracis.* An additional threat in the context of biological warfare is the potential use of genetically engineered strains, against which both vaccine and antibiotics may be ineffective *(CMAJ* 1 58:633, 1998). Thus, prevention of exposure (as with shelters and protective gear) remains indispensable.

Anthrax vaccine alone has not been implicated in the cause of the Gulf War Syndrome—the very definition of which remains controversial. The picture is very complicated because of the large number of stressors to which troops were exposed, including insects, insecticides, insect repellants, and anticholinesterases to protect against chemical agents. A number of vaccines against natural diseases were administered: polio, hepatitis A and B, yellow fever, cholera, typhoid, plague, and possibly others. Some troops were vaccinated against botulinum toxin and anthrax. Additionally, pertussis vaccine may have been administered as an adjuvant to increase the immune reactions to other vaccines, especially anthrax (Jamal GA: *Adverse Drug React Toxicol Rev* 17:1-17, 1998). In combination with pertussis vaccine, anthrax vaccine can induce immunity in 7 as opposed to 32 weeks.

It is hypothesized that multiple vaccinations may cause complex interactions and a large change in the immune response, causing symptoms like those observed in Gulf War veterans. Also, there is a report that the anthrax-pertussis combination induced "severe loss of condition and weight" in animals *(Nature* 390:3, 1 997).

Complicating the assessment—and contributing to veterans' mistrust of Washington—is poor record-keeping about chemical exposures and vaccines. There are no adequate records of recipients of special immunizations not in general use (anthrax and botulinum) (Wegman DH et al.: *Am J Epidemiol* 146:704-711, 1997).

The British defence ministry has also admitted that "medical record-keeping in the Gulf was not satisfactory," according to researcher Alan Silman of the University of Manchester *(Nature* 384:604,

1996). Moreover, "the MOD [ministry of defence] suffers from an excessive culture of secrecy" *(Nature* 390:3-4, 1 997).

Circumstantial evidence pointing to vaccines as a cause for the Gulf War syndrome also comes from the fact that no symptoms have been reported in French forces, who were not given the vaccines used by British and American troops *(ibid.)*

The questions raised about adverse reactions due to vaccine cocktails are highly pertinent in the civilian sector, now that such a large number of vaccines are mandated for administration to children, with exclusion from school and even charges of child neglect or abuse as penalties for noncompliance.

ANTHRAX AND TERRORISM

Late last year, the CDC received reports of a series of bioterroristic threats of anthrax exposure, in letters purportedly contaminated with the bacillus, or as telephone threats about contaminated ventilation systems. To date, all have been hoaxes. Decontamination was carried out with soap, copious quantities of water, and 0.5% hypochlorite bleach (standard household bleach diluted 1:10 with water).

Chemoprophylaxis may be recommended until *B. anthracis* is ruled out. For adults, the CDC recommends ciprofloxacin 500 mg bid OR levofloxacin 500 mg qd OR ofloxacin 400 mg bid OR (if a fluorquinolone is unavailable or contraindicated) doxycycline 100 mg bid. For children, both drugs have adverse consequences. Ciprofloxacin 20-30 mg per kg per day, divided every 12 hours (but NOT other fluoroquinolones) or doxycycline 5 mg per kg of body mass per day divided every 12 hours, may be used, weighing the risk of the drugs against the risk of life-threatening infection. Amoxicillin 40 mg per kg per day, divided every 8 hours, up to 500 mg tid, should be substituted as soon as possible if the organism is determined to be penicillin sensitive. If anthrax exposure is confirmed, the immunizations should begin as soon as possible, along with the antibiotics. Vaccine can be obtained through the CDC in Atlanta *(MMWR* 48:69-74, 1999).

A BETTER WAY ON THE HORIZON?

From a report posted by Dorothy Preslar (http://www.healthnet.org/programs/promed-hma/9810/msg00011.html) [TACDA editor's note: see next article for a complete news release on this topic]: A material developed by D. Craig Wright of Novavax, Inc., may be able to rapidly destroy a wide variety of dangerous bacteria and viruses, including anthrax spores. The material, called BCTP, is made from water, soybean oil, Triton X 100 detergent, and the solvent tri-n-butyl phosphate. Laboratory mice and rats thrive when fed the material.

"Rapid inactivation of anthrax bacteria and spores combined with low toxicity makes BCTP a promising candidate for use as a broad-spectrum, post-exposure decontamination agent," Baker said.

(Such ProMED-mail postings contain news from around the world on disease outbreaks. The web site is a project of the Federation of American Scientists, who generally appear to be advocates of the "global village" and disarmament, but whose web site (www.fsa.org) contains many key defense reports; the text of some important legislation, such as the Missile Defense Act of 1995; and congressional testimony on global warming as by John Christy, Patrick Michaels, Robert Balling, and Richard Lindzen.) *Ω JCD*

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

New agent destroys anthrax, doesn't hurt animals or the environment

From the University of Michigan News and Information Services
412 Maynard, Ann Arbor, Michigan 48109-1399
September 23, 1998

SAN DIEGO---BCTP looks like skim milk. Laboratory rats gain weight when they eat it. Spray it on your lawn and the grass will thrive. But according to tests conducted by University of Michigan scientists, this seemingly benign material could be a potent weapon against anthrax---one of the deadliest bacteria on Earth.

In a presentation at the Interscience Conference on Antimicrobial Agents and Chemotherapy (ICAAC) on Sept. 26, Michael Hayes, research associate in the U-M Medical School, presented experimental evidence of BCTP's ability to destroy anthrax spores both in a culture dish and in mice exposed to anthrax through a skin incision. James R. Baker Jr., M.D., professor of internal medicine and director of the Center for Biologic Nanotechnology in the U-M Medical School, directed the research study.

BCTP was developed by D. Craig Wright, M.D., chief research scientist at Novavax, Inc.---a bio-pharmaceutical company in Columbia, Md.---and president of Novavax Biologics Division. According to Wright, the material is made of water, soybean oil, Triton X 100 detergent and the solvent tri-n-butyl phosphate.

"One of the most remarkable characteristics of this material is its ability to rapidly destroy a wide variety of dangerous bacteria and viruses, while remaining non-toxic to people, animals or the environment," Baker said.

BCTP's effectiveness against anthrax spores is especially significant, because they are so difficult to kill. "Spores are like freeze-dried bacteria," Baker explained. "Their tough outer coat is resistant to disinfectants, freezing, drought, virtually anything we can throw at them. Spores can survive in the environment for many years and still generate live bacteria when given the right combination of water, nutrients and temperature."

Concentrated doses of strong disinfectants like bleach or formaldehyde will kill anthrax spores, according to Baker. Unfortunately, they also are toxic to people and the environment, which makes them useless for decontaminating a person, a piece of land or equipment exposed to the bacteria.

Since the Persian Gulf War, military authorities have become increasingly concerned about the threat anthrax and other biological warfare agents pose both to our armed forces and civilian populations. "Anthrax is often fatal and easily dispersed through air or water," Baker said. "We know that countries hostile to the United States have developed strains of anthrax which are resistant to antibiotics and existing vaccines. To counter that threat, the Defense Advanced Research Projects Agency (DARPA), is testing several possible new weapons against these biologic agents---including BCTP."

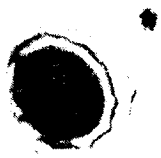
"When properly formulated, the components in BCTP form an emulsion of tiny lipid droplets suspended in solvent," said Wright. "These lipids fuse with anthrax spores causing the spore to revert to its active bacterial state. During this process, which takes four to five hours, the spore's tough outer membrane changes allowing BCTP's solvent to strip away the exterior membrane. BCTP's detergent then degrades the spore's interior contents. In scanning electron microscope images, the spores appear to explode."

In his conference presentation, Hayes described how even low concentrations of BCTP killed more than 90 percent of virulent strains of Bacillus anthracis spores in a culture dish. "We observed sporicidal activity with dilutions as high as one part BCTP per 1,000 parts culture media," Hayes said.

To determine its toxicity to animals, U-M scientists fed large amounts of BCTP to

laboratory rats and injected mice with the material subcutaneously. The animals gained weight, remained healthy and suffered no adverse effects.

Pre-treatment Top photo: magnified image of *Bacllus cereus* prior to treatment, exhibiting a cortex of uniform density and a well-defined spore coat.



Post-treatment Bottom photo: spore after four hours of BCTP treatment, exhibiting alterations and disruptions in cortex and spore coat.

To determine BCTP's effectiveness at treating animals exposed to anthrax spores, Baker's research team subcutaneously injected mice with *Bacillus cereus*---a closely related species of bacteria that can be safely handled in a university laboratory setting. Like *B. anthracis*, its lethal relative, *B. cereus* produces large, ulcerous areas of dead tissue if it penetrates the skin through a cut or injury. If untreated, these skin infections spread systemically, producing severe illness and death in 80 percent of the laboratory mice in the study.

"When we washed the animal's skin lesions with BCTP, the wounds began to heal," Baker said. Mice receiving BCTP either simultaneously with *B. cereus* spores or whose wounds were washed with BCTP an hour after exposure had a 95 percent reduction in lesion size. The death rate for mice receiving BCTP was only 20 percent.

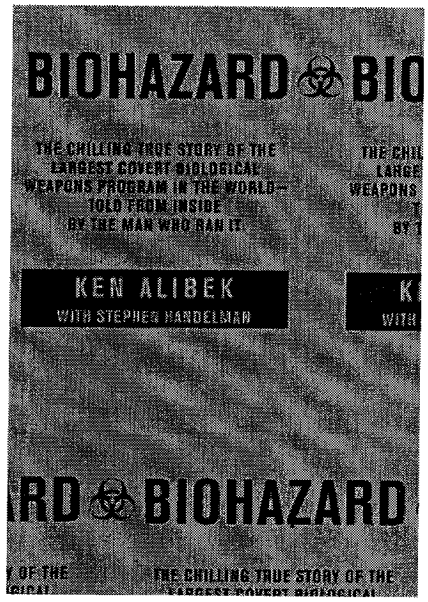
"Rapid inactivation of anthrax bacteria and spores combined with low toxicity makes BCTP a promising candidate for use as a broad-spectrum, post-exposure decontamination agent," Baker said.

In future studies, Baker plans to evaluate BCTP's effectiveness against inhaled anthrax spores, as well as other bacteria and enveloped viruses. His research has been funded by DARPA's Unconventional Pathogen Countermeasures Program. The U-M and Novavax have filed a patent application covering BCTP's use as a decontamination agent for various anti-microbial applications. Baker is a member of the Novavax scientific advisory board, but has no significant financial interest in the company.

Contact: Sally Pobojewski
Phone: (734) 647-1844
E-mail: pobo@umich.edu

For more information, see the following sites: http://www.novavax.com/ and http://www.umich.edu/~newsinfo/Releases/1998/Sep98/r092398a.html

Ω JCD



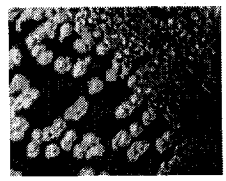
TACDA Book Recommendation

Biohazard provides very sobering details about historical Russian programs for biological warfare. Alibek, who at one time oversaw much of the Soviet Union's biological weapons program, describes such things as how a single ICBM tipped with anthrax bomblets "could wipe out the population of a city as large as New York." This book is available from many sources and sells for $14.97 at Amazon.com, hardcover, 336 pages (see www.amazon.com to order). ***Ω JCD***

By Linda D. Kozaryn
American Forces Press Service

WASHINGTON -- You can't see, smell or taste them, so how do you fight biological agents?

The military has geared up defenses against these invisible killers since the threat of biological weapons became a reality during Operation Desert Storm. Since then, the military has fielded new protection equipment and detection systems, and more counter measures are in the works.



Still, many people don't understand the nature of biological agents, how they would be deployed or how to protect themselves, according to Col. John V. Wade, an Army medical department officer who has specialized in the chemical/biological warfare field for the past 16 years.

During Desert Storm, Wade served as Army Gen. Norman Schwarzkopf's medical chemical/biological warfare advisor. On Oct. 1, 1998, he became deputy for counter proliferation and chemical and biological defense to the director of defense research and engineering and the undersecretary of defense for acquisition and technology.

Biological warfare encompasses "a mixed bag of bacterial agents, viruses and toxins," Wade explained. Lumping all biological warfare agents together as a class is almost as dangerous as comparing biological and chemical agents directly, they can be very different, he said. Depending on the situation, some are contagious, others are not.

"If you and I in this room are exposed to these agents, unprotected, we're in trouble," Wade said. "But when we leave the room, we may not necessarily 'spread it' in a contagious sense, unless some of the agent remains on our clothing and is physically transferred to someone else."

Usually, we think of biological agents as an aerosol threat, according to the Pentagon expert.
"Think of that as taking a liquid in an atomizer and putting it out in very, very small micro droplets. Aerosols behave a lot like chemical vapors. There's a lot of water vapor in a room, but we can't see it, or feel it, or taste it, or touch it. That's really what we'd have in a biological event."

These deadly 'bugs' do have some natural enemies, Wade said. "Most biological agents don't weather well. There are lots of things that make it difficult for these biological agents to exist. You put them out in ultraviolet light and they die. They don't like drying out. The same environmental factors that keep us from having one cold after another, will help us out to some extent in the case of a biological attack."

Biological agents can be dispersed one of two ways, Wade explained, either by what's known as a "line source" or a "point source." Imagine your platoon is dug in at a forward location. Miles away, an enemy boat sailing along a river or coastline, or possibly a train traveling a rail line, releases a spray. The enemy has determined the prevailing wind will carry the disease-laden aerosol in your direction. This "line source," Wade pointed out, "can cover a very sizable piece of geography."

A more commonly envisioned scenario involves a point source, Wade said. This is where the enemy launches a missile or other munitions which, upon detonation, spews biological agent directly on you -- the target. "Either way, what the enemy is trying to do is take the organism or the toxin and disperse it into the atmosphere so that the target troops then inhale it," he said. "That's really the threat of most of these agents. Just like the common cold, we get them via inhalation. "Because the agents are very small particles they can make it through our nasal passages -- evading all of the normal protective measures we have to filter things out -- and get down to the deep lung area where they then cause disease."

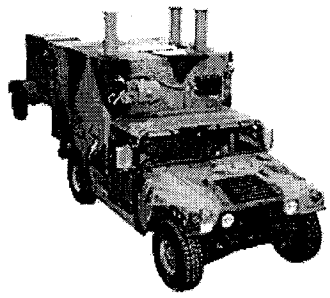
Unlike a chemical agent attack which would cause an almost immediate reaction, a biological attack would not cause a reaction until after an incubation period. "Generally it takes 24, 36, 48 hours before our troops would start showing what oftentimes are non-descript, flu-like symptoms which then progress to whatever symptoms the specific agent would normally cause," Wade said.

So, how do you defend yourself against an attack you don't even know has happened? Wade said the best defense comes from using a combination of immunization and physical protective measures. He pointed to the anthrax vaccine as a key countermeasure against a biological warfare attack. Wade, who has already had the entire series of anthrax shots as well as several annual boosters, said DoD is also working to develop a number of vaccines to protect against other biological threat agents.

When vaccines are not available as a biological countermeasure, Wade said the answer is "rapid detection, warning, reporting, and masking." He said it was important to note that the protective mask is "effective against every known biological agent, including those for which we don't yet have vaccines."

Defense officials are developing and fielding smaller, lighter, and simpler biological detectors, Wade said. "We have a number of systems that can now be deployed on the battlefield."

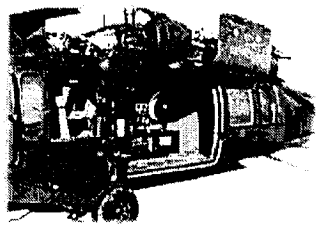
The Biological Integrated Detection System, known as 'BIDS,' is a mobile lab suite that can detect four different agents simultaneously. It's mounted on the back of a heavy HUMVEE and manned by four individuals. The Army deploys BIDS companies as corps or theater level assets to do bio-detection for all forces.



BIDS are point detectors, Wade noted. "You have to wait for the cloud to come to the BIDS system. We have the same type of system aboard ships called the Interim Biological Agent Detector or IBAD." After detecting what appears to be an unnatural agent, the systems first provide a warning, then determine specifically what the biological agent is.

"The individual doesn't need to know immediately whether it is anthrax or plague," Wade said, "they simply need to put on protective equipment. As a command, we'd need to know what agent it was so that if there are specific medical counter measures, we can start immediately to protect those who didn't get their masks on soon enough."

Biological agents are considered "strategic weapons," Wade noted. "They're not a good tactical weapon. So if someone is going to use them, we want our detection arrayed out in front of, or dispersed throughout, troop locations to give us early warning."



Defense officials also have developed (acquired) a long-range biological detector, Wade said. It's a laser-scanning instrument mounted on a Blackhawk helicopter that can look out about 50 kilometers. "It can't identify specific agents, but it's looking for that telltale, cigar-shaped plume that comes from someone laying down a line source," he said.

"If we can see it 50 kilometers off, that gives us a tremendous amount of time either to prepare for it coming our way, or to go out and sample that cloud," Wade

continued. "In the future, we'll have detectors that are light enough and small enough to go on an unmanned drone vehicle that will fly through the cloud, find out what it is, and report back."

Wade calls the military's 'Portal Shield' device one of its biggest successes since the Gulf War. This system, deployed in the Persian Gulf region in February 1998 during Operation Desert Thunder, is about two thirds the size of a typical office desk. It's fully modularized, self-contained, and it can detect eight different agents.

"The beauty of this device is that it's a network sensor," Wade said. Depending on the geography, as many as 18 sensors may be arrayed around a port or an airfield. The sensors talk to one another, so you're not relying on just one of them sounding an alarm.

Using an array system, the false positive rate very quickly gets down to zero, Wade noted. In Bahrain, U.S. forces have run more than 3,000 tests during 'round-the-clock' monitoring by the Portal Shield deployed there. The false positive rate was less than one half of one percent, he said.

Defense officials are also developing more user- and environment-friendly decontaminates. "We're working on improved technologies which are easier on us, as well as sensitive equipment such as electronics, while still being effective in eliminating the agents," Wade said.

"The equipment and materials we have for decontamination right now are pretty sturdy," he continued. "Super tropical bleach is almost as hazardous in terms of being a caustic to human skin as some of the biological agents themselves are. You sure want to have your gloves and all your protective equipment on if you're involved in using it.

Defense officials are also evaluating what actually needs to be decontaminated after a biological attack, Wade added. "When we were maneuver oriented, we always said we'd avoid contamination. We'd go around it, or button up and go through it. We sure weren't going to stop and live there."

But, if you can't move because you're stationed at a port or airport, Wade said, defense officials need to know what key areas need to be decontaminated.

"We're doing studies to see if you take a plane up to 30,000 feet and fly it at 600 to 700 knots, is there anything left to decontaminate," he said. "Does the flight line have to be decontaminated? What happens when a hazardous material oozes into concrete? We're doing studies now to answer the questions, 'How clean is clean?' and 'What has to be cleaned for us to be able to continue our mission.

Web Sites Recommended by the DoD on Chem/Bio/Nuc Threats (see http://www.defenselink.mil/specials/chembio or www.tacda.org for direct linkages):

Countering the Anthrax Threat
Knowledge Key to Combating Chemical, Biological Warfare
United States Department of Defense Office of Counterproliferation and Chemical/biological Defense
Nuclear, Biological and Chemical Defense School Fort McClellan, Ala
Gulflink Chemical/biological Warfare
Defense Science and Technology Planning Chemical/biological Defense and Nuclear
Army Medical Chemical Defense Research Program
Army Reasearch Laboratory Army Science and Technology Master Plan International Research Capabilities-chemical and Biological Defense
U.S. Army Medical Research Institute of Infectious Diseases (USAMRIID) Websites
Chemical and Biological Warfare Websites

Ω JCD

Basic Whole-Wheat Bulgur Cookery

By James T. Stevens

[This article is a partial extract from Chapter 6 in the author's excellent book, Making the Best of Basics. For more information on wheat and numerous other topics, please buy his book. Used by author's permission]

One of the most basic and interesting forms of cooked wheat is bulgur. It is used worldwide and ranks as one of the most versatile and utilized whole-wheat foods in many Middle Eastern countries. Bulgur is easily made from whole-wheat kernels as they come naturally from the field, with only the chaff stripped off. Sometimes called *wheat berries*, these whole kernels need soaking or steam cooking to become tender. When cooked, they have a sweet, nut-like flavor and a slightly chewy texture.

Bulgur is probably the easiest whole-wheat food to prepare. None of the measurements are critical, and there's no fussing with stirring, continual watching, etc., as with flour recipes.

Bulgur can be made from whole-wheat kernels and cracked wheat kernels—or many other grains, too. It can be used as a very nutritional breakfast cereal, to replace rice in most dishes, substituted for mashed potatoes, or baked with selected seasonings to make a delightful, nutritious, crunchy TV snack, and is great in stuffing for meats and fowl.

There are many known ways to prepare dishes with wheat bulgur, and many ways that haven't been discovered yet.

Directions for Making Basic Bulgur

Wheat kernels can be made into *Basic Bulgur* quite simply. This recipe is an in-home method for processing the whole-wheat grain—called *wheat berries*—for easy and quick utilization whenever needed. *Basic bulgur* exists in two forms, whole grain or cracked.

Basic Bulgur

1 part whole-wheat kernels
2–3 parts water
$^1/_2$–1 tsp. salt

Place an amount of wheat and water to rolling boil in an appropriately large, heavy pot. Cover wheat with water, approximately 2" above level of wheat. *Basic Bulgur* is easy because the measurements are not critical! Bring ingredients to boil, then turn off heat and let mixture stand for $1^1/_2$–2 hr. Repeat cycle by bringing mixture to rolling boil, adding water, if needed. Turn off heat, let stand for 15–30 min. Stir in salt to taste. Drain all remaining water from cooked wheat berries. This is a batch of *Basic Bulgur*.

Directions for Making Basic Cracked Bulgur

Cracked bulgur can be made from scratch more quickly and easily than whole-berry bulgur. This is the simple recipe for making *Basic Cracked Bulgur:*

Basic Steamed Cracked Bulgur

Combine 2 C. cracked wheat and 4 C. water in an open-top pan or metal bowl. Elevate pan or bowl (use smaller bowl or jar lid) inside a larger, covered pan. Add water in the larger pan to 2" below the rim of the smaller pan. Cook over high heat, covered, for 15 min., then reduce heat to very low. Steam until tender and water in small pan is absorbed, about 3 hr. This is *Basic Cracked Bulgur.*

BULGUR BASICS

These are the additional things you need to know to complete the *Bulgur Basics* course: storage of moist and dried bulgur, drying and rehydrating bulgur, cracking whole-wheat kernels and dried bulgur, and how to make bulgur by alternative methods.

Storing Moist Bulgur

Refrigerator: put moist bulgur in a tightly-covered bowl, plastic airtight container or heavy-duty, self-sealing, plastic freezer bag. This provides storage for about two weeks.

Freezer: for longer-term storage of moist bulgur. Effective storage period is approximately 1 year. For longer storage periods, see the following Drying Basic Bulgur section.

Drying Basic Bulgur

Basic Bulgur can be dried for long-term storage. It dries quickly and easily in either the oven or in an electric drier. Air drying is not recommended, since bulgur is so water-laden it tends to spoil before drying completely. Here are the two best methods for drying bulgur:

Oven drying: spread *Basic Bulgur* in a thin layer on cookie sheet. With oven temperature set at 200°F, allow to slow cook until crispy. Stirring and turning with a spatula decreases drying time. Leave oven door slightly ajar to permit moisture to escape. Allow *Basic Bulgur* to cool completely before packaging.

Electric dryer: cover drying tray with plastic film or Kraft paper. Spread cooked bulgur in a thin layer. Dry until crisp and brittle. Cool completely and package for storage.

Cracking Dried Basic Bulgur

Barely crack the dried *Basic Bulgur* in a blender or grain mill. In most *Basic Bulgur* recipes, either cracked wheat or whole berries may be used equally well. However, the *Basic Cracked Bulgur* will be less coarse and have a more delicate wheat taste.

Storing Dried Basic Bulgur

Place dried *Basic Bulgur* in an air-tight package. The best packaging for small quantities is the freezer-quality, heavy-duty, food-grade, sealable plastic bag. The large size holds just enough dried bulgur for a meal. Several bags may be placed in a larger, metal or glass container to further protect them. Store in a cool, dry, and dark location.

Rehydrating Basic Bulgur

Use the following chart as a guideline for rehydrating *Basic Bulgur.*

Basic Bulgur Rehydrating Method

Yield	Ingredients		
1 C. = 1 serving	Water	Salt	Grain
1 C.	3/4 C.	1/4 tsp.	1/3 C.
2 C.	2 C.	1/3 tsp.	2/3 C.
6 C.	4 C.	1 tsp.	2 C.

Rehydrate 15–30 min. in any liquid, or combination of liquids, until suited to your taste.

Note: *When a recipe calls for cooked whole wheat, measure equal amount of dried* BASIC BULGUR. *Add liquid to cover. Bring to a boil until rehydrated to your taste or recipe directions.*

Alternate Methods for Making Basic Bulgur

Use one of the following alternate recipes or methods to make *Basic Bulgur.* With all these choices, there's bound to be one *Basic Bulgur* which will become your favorite.

BASIC MICROWAVE BULGUR

1 C. whole-wheat kernels
3 C. water
$^1/_2$–1 tsp. salt

Put water in large microwave safe bowl. Cover with Kraft or waxed paper loosely folded over top of bowl. Heat water for 5 min. on high power setting. Stir in rinsed wheat kernels, cover, and heat again on high power for 5 min. Reduce to medium ($^1/_2$ power), continue covered heat for 1 hr. until soft and chewy. Allow to stand covered 5 min. Remove cover, test for doneness, then stir in salt to taste. This is a batch of *Basic Microwave Bulgur.*

BASIC ALL-NIGHT BULGUR

Combine ingredients for *Basic Microwave Bulgur,* except salt, in a covered pan. Bake about 5 hr. or overnight in a warm oven (150°–200°F degrees). Stir in salt to taste.

*BASIC BOIL & WAIT BULGUR**

Combine ingredients for *Basic Microwave Bulgur,* except salt, and bring to boil. Then immediately cover and remove from heat. Let stand overnight or at least 10–12 hr. Stir in salt to taste. May be eaten then or warmed later, when desired.

* Some folks make *Basic Bulgur* by this method the night before, warm it in the microwave oven and eat it on the way to work the next morning.

BASIC BOIL & SIMMER BULGUR

Combine ingredients for *Basic Microwave Bulgur,* except salt. Bring to a boil, reduce heat and simmer gently for 4–6 hr. or until tender. Add water as needed to prevent sticking. Stir in salt to taste.

BASIC STEAM BULGUR

Combine ingredients for *Basic Microwave Bulgur,* except salt, in an open top pan or metal bowl. Elevate pan or bowl inside a larger, covered pan with water 2" below the rim of the smaller pan. Cook over high heat, covered, for 15 min., then reduce heat to very low. Steam until tender and water in small pan is absorbed, about 3 hr. Stir in salt and eat.

BASIC SLOWCOOK BULGUR

Cook ingredients, except salt, in a crock pot or slow cooker. Cover; cook 4–6 hr. Add salt.

BASIC BACHELOR BULGUR

1 C. whole-wheat grain
$^1/_2$ tsp. salt
2 C. boiling water

Even a bachelor can make this *Basic Bulgur* recipe! Combine ingredients with *boiling water* in 1 qt. thermos at night. Screw lid on lightly and leave until morning. Grab it on your way out the door to work! Leave out salt, if you prefer salt-free bulgur.

Note: *BASIC CRACKED BULGUR—as well as many other kinds of grains may be cooked as described here by decreasing the cooking times. The only part of the cooking process that could possibly go wrong with making BASIC BULGUR is to cook it without water!*

RECIPES FOR BASIC CRACKED BULGUR

These recipes utilize *Basic Cracked Bulgur.* The whole-wheat berries are cracked in a grinder or blender prior to processing. The cracking process makes a finer, more delicate tasting food than the classic *Basic Bulgur.*

BASIC BULGUR SAUSAGE

1 C. *Basic Cracked Bulgur,* cooked
1 tsp. sage
2 dashes onion salt
2 dashes garlic salt
dash cayenne pepper
1 tsp. Worcestershire sauce
1 egg
1 tsp. brown sugar
5 drops liquid smoke
1 tsp. beef base or bouillon cube

Combine all ingredients, mixing vigorously. Form patties and fry in small amount of oil.

BASIC BULGUR SEASALAD

5 C. *Basic Cracked Bulgur*, cooked & cooled
1/4 C. green pepper, diced
1/2 C. green onion, diced
1 C. celery, diced
1 C. shrimp (or crab, tuna, etc.)
1/2–1 C. mayonnaise
2 T. pickle juice or vinegar
salt to taste

Combine and chill. May use cooked and cooled rolled grain instead.

RECIPES FOR BASIC BULGUR

BASIC BULGUR CEREAL

2 C. *Basic Bulgur*
2 G. water

Crack *Basic Bulgur* in grinder or blender. Heat in steam 10–20 min. or boil 5 min. in water or other liquid. Serve hot and sweeten to taste.

BASIC SWEET BULGUR

3 C. *Basic Bulgur*
1/2 C. water
milk
sugar or honey

Heat cooked bulgur in water. Serve hot with milk and sweeten to taste. Makes a chewy breakfast cereal. Add dried fruit for additional flavor and nutrition.

BASIC BULGUR PORRIDGE

6 C. *Basic Bulgur*
1/4 C. raisins
1 C. milk
1/2 C. sugar
honey

Heat bulgur and raisins to boil, reduce heat. Stir in milk and sugar, simmer approximately 3–5 min. Serve porridge hot, with additional milk and honey to taste. Brown sugar or maple syrup may also be used to sweeten porridge.

BASIC CRUNCHYSNAX

2 C. *Basic Bulgur*
seasonings of choice

Spread *Basic Bulgur* thinly on cookie sheet. Bake at 325°F, stirring occasionally, until very dry and crunchy. Add seasonings to taste. Serve as snacks.

BASIC BOSTON-BAKED BULGUR

4 C. *Basic Bulgur*
1/2–1 C. catsup or BBQ sauce
1 onion, sautéed
salt and pepper
1 C. water
1/2 C. molasses
3–4 tsp. prepared mustard
3 slices bacon, cooked & diced

Mix together and bake 30 min. at 325°F.

RECIPES FOR BASIC BULGUR SOUPS & SALADS

BASIC BEEF & VEGGIE SOUP

1 1/2 lb. ground beef
1–2 lb. beef knuckle bones
2 1/2 qt. water
1 C. *Basic Bulgur*
1 C. diced or shredded carrots
1/2 C. chopped onions or leeks
1 C. sliced celery
1/4 C. chopped parsley
2–3 tsp. pepper
1/8 tsp. powdered cloves
1/4 tsp. salt
1 can tomato soup
1/2 tsp. fresh herbs (*fines herbs*[1])

Brown ground beef and pour off grease. Remove fat from bones. Simmer together water, ground beef, and bones for 2–3 hours. Add remaining ingredients. Cover and continue cooking until vegetables are tender, 15–20 min. Remove meat from bones, dice and return to soup mixture. Heat to boiling. *Yield: 6–8 servings.*

BASIC BULGUR SALAD

1/2 C. *Basic Bulgur*
water to cover
4 tomatoes, cubed
1 C. fresh mint (chopped)
1 C. chopped parsley
1 C. chopped green onions
1 green pepper, cut in strips

Soak *Basic Bulgur* in water to cover for 30 min. Squeeze out water and transfer to a bowl. Combine remaining ingredients, add salad dressing and toss. *Yield: 4 servings.*

BASIC SEAFOOD SALAD

1 C. *Basic Bulgur*
2–3 T. mayonnaise
2 T. diced green pepper
3/4 C. diced celery
1 tomato, cut in wedges
1/4 C. chopped green pepper
1 C. tuna or cooked shrimp

[1] Fresh herbs (*fines herbes* is the French name) are usually proportionate measures of fresh parsley, chives, tarragon, and chervil––when and where available. Sometimes, marjoram and thyme, and even basil may be added to the mixture. The essence of fresh herbs is achieved by mincing them together with a sharp knife, then adding at the last minute to the pilaf— thus imparting the essential oils to the food.

Marinate *Basic Bulgur* in mayonnaise for 20–30 min. Add remaining ingredients. Arrange greens around a bowl, pile seafood mixture on top. Sprinkle paprika over seafood.

Recipes for Basic Bulgur Main Dishes

Basic Baked Chicken

- 1/2 C. *Basic Bulgur*
- 1 can of mushroom soup
- 1 C. chicken broth
- 1/4 tsp. sage
- 1/2 tsp. poultry seasoning
- 2 T. vegetable oil
- 1 pkg. chicken thighs (skins removed)
- 1 clove garlic
- 1/2 C. chopped onion

Put *Basic Bulgur* in casserole dish. In separate bowl combine soup, broth, and seasonings. Pour 1/2 of the soup mixture into the casserole and mix with the wheat. In a skillet, heat oil and brown chicken. Remove and arrange on top of *Basic Bulgur*. Add garlic and onion to skillet, sauté until tender. Remove with a slotted spoon and stir in remaining soup mixture, then pour over chicken. Bake at 350°F for 1 hr.

Basic Cheese Casserole

- 2 1/2 C. *Basic Bulgur*
- 1 C. milk
- 3/4 C. grated cheese
- 2 cans cream of chicken soup*
- 1/2 tsp. dry mustard

Combine ingredients, reserving 1/4 C. cheese to sprinkle on top of mixture. Bake at 375°F for 30–40 min.

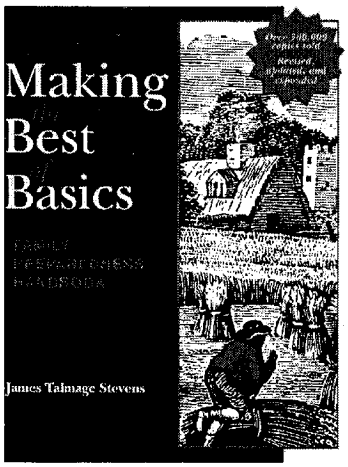
* Substitute tomato soup and add 1/4 tsp. oregano for Mediterranean flavor.

Basic Beef Casserole

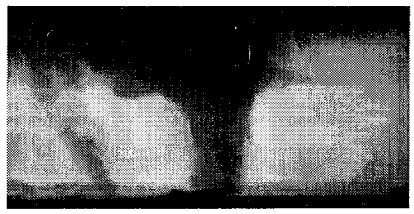
- 1 lb. ground beef
- 1 clove garlic, crushed
- 1 T. parsley flakes
- 1 tsp. celery flakes
- salt and pepper to taste
- 1 large onion, diced
- 1 C. *Basic Bulgur*
- 2 cans tomato soup
- 1/2 C. catsup or tomato sauce
- grated cheese

Sauté meat and seasonings with onion. Combine *Basic Bulgur* with meat mixture, soup and catsup, then pour into casserole dish. Sprinkle with cheese. Bake 350°F for 30 min. *Yield: 6–8 servings.*

Ω JCD



Guardsmen help Oklahoma Recover from Killer Tornadoes



By Master Sgt. Bob Haskell (Army News Service)

OKLAHOMA CITY -- About 1,000 National Guard members were activated ... to help Oklahoma residents recover from the tornadoes which ripped through that state May 3.

It was one of the 10 worst tornado outbreaks in U.S. history. Winds reaching 318 mph -- some of the strongest ever recorded -- killed 43 people and injured 800 more along a 140-mile, $1 billion path of destruction that hooked through suburbs and communities around Oklahoma City May 3.

Another 314 Kansas National Guard members rolled out to help victims in Wichita and the demolished suburb of Haysville where still more tornadoes killed five people that same night.

National Guard troops quickly joined forces with police, fire and medical responders and with Red Cross and Salvation Army volunteers. It included some tough, grizzly duty.

Pfc. David Gibbs, a metal roof construction worker by trade, helped move body-bagged fatalities during a four-hour shift at the same Oklahoma City morgue that handled many of the 168 people killed in the Murrah Federal Building bombing four springs earlier

Other Guardsmen probed for bodies at Bridge Creek. And most members of 45th Infantry Brigade and 90th Troop Command summoned for duty pulled 12-hour day and night security watches, helping keep looters as well as sightseers out of the stricken communities.

"It would be chaos out here. There are people who live off disasters. They'd be swarming all over this place," said an Oklahoma City policeman about the need for security.

"These Guard people do what we ask them," summed up another Oklahoma City policeman, Sgt. Don Bingham, who watched through the chilly night with four Guard members. That crew included Sgt. Lewis McKinney who joined the 120th Engineer Battalion in February, 10 years after leaving the Navy, to earn retirement benefits.

In Kansas, Guard members delivered water to thirsty livestock and hauled donated goods to distribution centers. They also cleared away uprooted trees and other debris with a bulldozer, a pair of front-end loaders and six dump trucks. "The biggest challenge was taking on a task where we didn't know what we had to deal with," said Air Guard 2nd Lt. Jason Fountain in Wichita. "It was still dark when we got here."

Some Guard members met some interesting people.

Kansas Spc. Brent Buckley checked the identification of one driver who proved to be a Secret Service agent preparing for Vice President Al Gore's visit to Haysville on May 6.

Oklahoma Army Guard Sergeants Jason Flugge and Roger Farley spoke briefly with President Clinton when he visited Del City on May 8.

And Lt. Gen. Russell Davis, chief of the National Guard Bureau, lauded all of the Guard workers while visiting both states with Ruby DeMesme, assistant secretary of the Air Force for Reserve Affairs.

"I think when people join the Guard, they understand what they're getting into," Davis said. "They understand that the neighborhoods they're working in today could be theirs tomorrow."

Many American flags flying from stakes and sticks amidst the rubble supported Davis's contention that "the spirit of the American people is really incredible.

"I think the statement from the people of Oklahoma City is one of resilience," added Davis following May's tornado tragedy that was immediately compared to the bombing on April 19, 1995.

More than 740 Guard members were on state active duty during 37 days after a truck bomb blew away one side of the federal building. Empty buildings and boarded up windows next to the site make it a grim place even as work progresses on the Oklahoma City National Memorial that is scheduled to be completed next year.

The tornadoes killed far fewer people. But the destruction of 3,098 Oklahoma houses and apartments and the damages to 7,844 others afflicted many more residents and reminded everyone that Mother Nature still packs a terrible punch.

(Editor's note: Master Sgt. Bob Haskell is a staff writer for the National Guard Bureau and a regular ARNEWS contributor. Spc. Darren Huesel in Oklahoma and Stephen Larson and Spc. Brian Jopek in Kansas also contributed to this report.) *Ω JCD*

FEMA Tornado 'Safe Room' Design Plans Available

Residents of tornado-prone areas can get information from the Federal Emergency Management Agency (FEMA) about how to build a "safe room" in their homes that can provide protection against deadly tornadoes. The 25-page illustrated FEMA publication, *Taking Shelter from the Storm: Building a Safe Room Inside Your House*, outlines the basics of in-house safe room shelter design, including construction plans, materials and construction cost estimates. "*The safe room project is part of an ongoing FEMA initiative to encourage people to take measures to protect themselves and their property before disasters occur*," FEMA Director James Lee Witt said. "When constructed according to the plans, the safe room can provide protection against winds of up to 250 miles per hour and projectiles travelling at 100 miles an hour."

Developed in collaboration with the Wind Engineering Research Center of Texas Tech University in Lubbock, Texas, Taking Shelter from the Storm draws on 25 years of field research by the Texas Tech researchers. Their work has included studies of the performance of buildings following dozens of tornadoes throughout the United States and laboratory testing on the performance of building materials and systems when impacted by airborne debris. The National Association of Homebuilders Research Center evaluated the designs for construction methods, materials and costs. The shelters are designed with saving lives as the primary consideration.

Taking Shelter from the Storm: Building a Safe Room Inside Your House along with the construction plans (FEMA Publication 320) can be ordered at no cost from FEMA Publications at **1-888-565-3896**. The publication, **but not** the construction plans, can be downloaded from the FEMA Web site (www.fema.gov/mit/tsfs01.htm). *Ω* ***JCD***

100's Saved With Early Warnings in Oklahoma and Kansas

From a May 24th NOAA News Release

The Turner family in Grady County, Okla., try to recover some of their belongings. They credited their survival with advance warnings. After telling neighbors to join them they crammed 35 people into a storm cellar. The winds from the F-5 tornado pulled the door off the cellar, but all survived.

As violent tornadoes ripped through populated areas of Oklahoma and Kansas May 3, countless lives were saved as a direct result of early warnings and new technology installed during the National Weather Service's (NWS) modernization effort.

Preliminary records show 52 tornadoes hit southwestern and central Oklahoma in a 10 hour period. Forecasters at the Norman NWS Forecast Office issued 116 county warnings broadcast on NOAA Weather Radio, ham radio and local television and radio stations. The Wichita, Kansas NWS Forecast Office issued seven county warnings that same evening. Additionally, severe weather outlooks issued earlier in the day by the Storm Prediction Center (SPC) in Norman and the NWS Forecast Offices put everyone on alert.

Dr. James Baker, NOAA Administrator, said during a recent visit to the stricken area, "*It is fair to say that the intense effort to modernize the National Weather Service paid off in this single event. All the elements worked. Everyone should be really proud of the front line or support function they did to make this happen.*" "*With the amount of damage, we can estimate based on a long historical record that without warnings hundreds more lives would have been lost—700 direct fatalities could have occurred*," said Harold Brooks, research meteorologist at NOAA's National Severe Storms Laboratory (NSSL), also in Norman.

One survivor, Darrell Turner, along with members of his family and neighbors—35 total —sought shelter in his brother's storm cellar in Grady County, southwest of Oklahoma City, after hearing National Weather Service tornado warnings on a local television station. Winds from the F5 tornado pulled the door off the cellar and destroyed their homes. Yet everyone inside survived. Unfortunately, in the same community, 11 people lost their lives.

Dr. Baker and John Jones, Deputy Assistant Administrator for the National Weather Service, visited Norman May 13 to meet with employees involved with the tornado outbreak. Dr. Baker expressed his respect and admiration for everyone's hard work, and credited the group's spirit of commitment and professionalism. *Ω* ***JCD***

Individual and Community Preparedness for Y2K

Testimony of Paloma O'Riley, Cassandra Project
before the Senate Special Committee on the Year 2000 Problem, May 25th, 1999

Senator Bennett, Senator Dodd, members of the committee, it's an honor and privilege to be asked to speak to you today. Before I begin, I'd like to say thank you for the time, effort and dedication you have invested in raising awareness and encouraging preparedness for potential year 2000 problems. In an age where sticking your neck out is considered not just foolish, but career shortening, you are to be commended for doing so.

WHY IS NEIGHBORHOOD AND EMERGENCY PLANNING NECESSARY

The year 2000 date change represents a problem of unknown and unprecedented dimensions, implications and challenges. The one indisputable fact about Y2K is that no one knows what will happen. There could be anything from minor problems lasting only a few hours, to serious problems lasting several weeks.

So why should individuals and communities develop emergency contingency plans, especially since there's no proof we'll need them? It begs the question - do we need proof that a disaster may hit before we're willing to take precautions? Do we need proof our house will burn down before we buy homeowner's insurance; or an accident before we buy car insurance? How many of us have bought things 'just in case'? We purchase insurance because we don't know what will happen. It's for that reason we should develop contingency plans, and not just for Y2K.

If Y2K manifests itself in several locations at the same time, traditional emergency agencies and services will be unable to respond. Red Cross can set up only so many shelters, FEMA was designed to handle only one or two disasters at a time. If several communities experience problems, it's possible outside help may be unable to respond for quite some time. During the recent New England/Canada ice storms, for example, some people were without electricity for up to 5 weeks. Therefore it's important that individuals be able to shelter in place, and communities be able to cope without outside assistance for an extended period of time.

Whether Y2K is a tempest in a teapot or not, I guarantee that it will be followed by a winter storm, flood or some other natural disaster. Preparedness helps make individuals and communities more resilient and able to cope and bounce back more quickly. Y2K gives us the motivation to make emergency preparedness part of our overall lifestyle sooner rather than later. President Clinton should call for the general level of emergency preparedness to increase, regardless. There is no downside to encouraging emergency preparedness, unless the desired state of the people is one of helpless dependence.

There are many in this country who are not able to prepare, or care for themselves in an emergency. Approximately 700 people suffer cold related deaths in a normal year; several died in their own homes because of loss of heat. These are preventable deaths. Sadly, many of these same people are not discovered for days or weeks after their deaths. There was no neighborhood program in place to check on those most vulnerable to the effects of disruptions or emergencies.

During the ice storms of 1998 and 1999 there were injuries or deaths that could have been prevented, if personal and neighborhood emergency planning and preparedness had been in place. Our dependence on emergency services has grown to such a degree that we feel we don't need to take care of ourselves, 'someone else' will come to the rescue if there's a problem.

An example of how dependent we've become was revealed in conversation I had with a fire chief in Prescott, AZ. During an unexpected snowstorm, the fire department received a frantic call from a woman stranded in her home. She had no food in the house and was unable to get out due to the snow. The department had to send men out, pick up fast food, and get it to the woman. Apparently they weren't even thanked.

According to the fire chief and many others I later spoke to, it's an all too common story, occurring with increasing frequency. Citizens expecting, and often demanding, that they be taken care of in situations

of their own making. We need to be reminded that the responsibility to care for ourselves and each other truly and rightly rests with us. Needless discomfort, inconvenience, injury and sometimes death are the result of over-dependence on emergency services, and lack of personal emergency planning.
As Senator John Glenn so aptly reminded us during an interview last year:

> *The greatest antidote to worry, whether you're getting ready for a space flight or facing a problem in daily life, is preparation. The more you prepare, the more you study, the more you think, the more you try to envision what might happen and what your best response and options are, the more you are able to allay your fears about the future.*

If we have Y2K problems and are left in the cold and the dark, who is responsible for ensuring our comfort? Is it not better to "light a candle than curse the darkness?" After the event has passed and our lives resumed, we can then take time to determine what went wrong; not to assess blame, but to seek to prevent it or minimize it in the future. If there is blame to be assigned it will fall to those who could and should have provided leadership and encouraged emergency preparedness - but refused to do so.

OBSTACLES TO NEIGHBORHOOD AND COMMUNITY PLANNING

Mixed Messages from Government and Business

Thousands of people across the US, and other countries, are working hard to help their communities develop emergency contingency plans. But they are in trouble and success is hard won, sometimes at great personal cost. Denial and skepticism are their greatest obstacles, compounded by negative media stereotyping and reporting.

For example, there is much of what is coming to be known as 'happy talk' coming from our administration, government agencies, corporations, and institutions. 'Happy talk' is designed to lessen anxiety about Y2K among the general public, supposedly to prevent "a panic". When asked, "panic" is defined as people pulling their money out of the bank or selling off stock. It's disheartening that "panic" equates not with accidental injury, civil unrest, looting, etc., but with the disruption of the economy. With a few notable exceptions, their concern seems not for our families' health, safety, and welfare, but with not rocking the economic boat.

Contrary to the oft-used excuse, people are not panicking and will not panic if they are given credible information and guidance on what they can do; and in a timely manner. Scientific studies and historical data attest that people do not panic in a crisis unless they feel they are out of options, or been given inaccurate, misleading, or conflicting information. True panic can erupt if people are not warned beforehand that there may be problems, and suddenly wake up one morning in the middle of such. Only leadership, encouragement, and guidance on how to prepare for potential problems can prevent this from happening. If government and business is concerned enough about Y2K that they privately or quietly encourage preparedness activity, then they must abandon the public relations 'happy talk' strategy that makes it nearly impossible for us to succeed. You can't both ridicule and motivate to any good end.

As disturbing is the recent trend of fervent insistence that everything is going to be fine, then adding in an off-handed way that it's a good idea for people to prepare. It's done in a manner that brings to mind legal disclaimers. In the event there are problems the defense may be, "but we said you should prepare". I doubt this approach will spare those who employ it from justified anger and outrage in the wake of any problems, however.

Pervasive denial and skepticism abound because 'happy talk' is working, unfortunately, and is having a greatly undesirable outcome by creating for some a false sense of security. When told everything's going to be fine, many people believe government and business. While it may in the end be true, it causes these same people to look at neighborhood Y2K organizers with suspicion because they encourage a course of action contrary to public assurances. The media then compounds the problem by painting organizers as extremists, alarmists, or worse. This makes it that much more difficult for them to even talk about Y2K with their neighbors. Under these conditions, how can we help each other prepare?

Myself and many others have repeatedly called upon the President, and his Y2K Council, to provide leadership on this issue. There has been little or no response of real substance. The Administration's current plan is to respond with money and resources to fix problems after they occur. This "White Knight" approach

is, quite frankly, an act of cowardice and an abdication of responsibility for the people. It abandons us in a time of genuine need for leadership and guidance.

Sensational Media Coverage

Within media companies there appears a state akin to schizophrenia, with no clear position on the Y2K problem. The same organization can run, and often does, widely divergent pieces on Y2K, occasionally at the same time. With few exceptions, we are subjected to tabloid journalism that focuses on the dramatic rather than factual. How on earth is the public expected to make sense of the issue when the media either can't make up its mind, or is interested only in the sensational? My theory is that the reality of Y2K preparedness and organizing is so ordinary, that it's relatively uninteresting. But truth, and reality, is usually somewhere in the middle.

This irresponsible approach by the media is the bane of Y2K community organizers. Well-meaning and media-inexperienced people have been made to look like fools or worse; barely recognizing themselves or what they said during interviews when the story's released. Many community groups decline to be listed on the internet simply because the media has engendered very negative feedback. This stereotyping and public maiming of those trying to help their communities has a definite quelling effect, hampering progress and causing many to give up the effort. Are there people who are running for the hills, taking extreme positions? Of course. Those types of people have always been with us, Y2K or no. But, contrary to media hype, they are the exception, not the rule.

Adding to the confusion, members of the media seem unwilling or incapable of making distinctions. Rare attempts have been made to separate legitimate community efforts from the activity of a handful of extremists or paramilitary groups; from so-called, usually self-proclaimed (or media bestowed titled) experts, from the very few who truly are. All in all the media has done a very poor job of researching and reporting on the subject, thereby denying the public credible and factual information. We must hold them accountable for adding to the confusion, for not helping to provide needed clarity.

BENEFITS

The benefit of developing personal contingency plans, as with insurance, is that it can cover a multitude of situations. For example, if you prepare for the possibility of loss of heat, then whether Y2K or a wind storm knocks out power, you and your family will still be comfortable. Whether a storm occurs next month or next year, you're ready. There is no down side to being prepared for emergencies. It's so unfortunate that people are often viewed as fools for doing so.

The benefits of successful community organizing around Y2K is being seen and recognized across the country. Many communities have found there is a great deal more good resulting from the effort, than possible negative effects. Those participating in developing neighborhood contingency plans are creating new and productive relationships with local emergency services, getting to know their neighbors, and forming mutually beneficial partnerships and understanding with local business and government. Those involved are hearing less and less "what's in it for me?" "me first!" or "look out for number one". More often now is heard, "what can *we* do?".

Communities have come to realize that whether Y2K problems occur or not, they have additional reason to rejoice; for the time and effort invested in contingency planning was not in vain. When future floods, earthquakes, or ice storms occur, they will not be helpless and over-dependent on outside help. Neighbors and communities are finding that together they can pool resources and help themselves and each other meet any emergency. This new found sense of self-reliance and self-confidence, and a rediscovered sense of community, are a few of the gifts and benefits Y2K community contingency planning has in store for us.

To close, I'd like to offer the following quote as a call for presidential action. In 1936 during a debate on the national defense posture, Winston Churchill said:

> *"Owing to past neglect and in the face of plainest warnings, we have now entered upon a period of danger. The era of procrastination, of half measures, of delays is coming to a close. We cannot avoid this period, we are in it now. Unless this House resolves to find out the truth for itself, it will have committed an act of abdication of duty without parallel."* **Ω JCD**

Journal of Civil Defense: May – June 1999

TACDA Store Catalog

Special offers and fund-raisers – Great values in preparedness supplies!

Please visit our more complete on-line store catalog at: www.tacda.org

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-1)	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-2)	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-2)	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-3)	Four-Month Healthy Food Supply	207 Lb. in 48 cans (8 cases), 3 weeks or less	$695.00
**** 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.

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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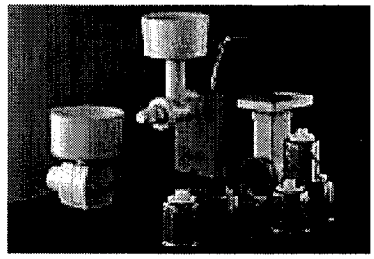
* The Super Clean™ Process

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 Quick2™ Gas Mask

The Quick2™ Chem-Bio Escape Hood provides rapid protection against chemical and biological warfare agents.

Quick2™ is compact (2½" x 4" x 6" package size), lightweight (12 oz.) and can be donned in seconds. It is comprised of a chemical resistant hood with integrated neck dams, chem-bio filter, mouthbit, and a large anti-fog visor. The spacious hood protects the entire head and seals at the neck by means of dual neck dams. The interior of the hood is quite spacious and can easily accommodate eyeglasses, a full head of hair and even the largest head size. All seams are both sewn and taped. In normal use, the hood is inflated after donning to increase the overall protection factor. Inflation is accomplished by the wearer exhaling into the hood instead of out through the mouthbit. The hood is available in either Yellow (standard) or Gray (special order). Dual independent neck dams provide double backup to the primary mouthbit seal (that is formed between the mouthbit and the mouth) and automatically adjust to fit necks from 9" to 24" in circumference. The Quick2™ neck dams are highly effective and eliminate typical problems such as face fit, mask sizing, and sealing against facial hair. The high performance filter contains military grade carbon (that is, packed with the same carbon material as the standard filter cartridge used by the U.S. Army) to absorb chemical gases and HEPA grade media to remove biological particles. Breathing is accomplished by means of a "snorkel type" mouthbit inside the hood. This mouthbit is comfortable to use, even for extended periods of time. The mouthbit can easily be ejected, between breaths, if extremely clear verbal communication is required. The mouthbit design allows universal fit and helps to prevent fogging inside the hood. A noseclip with elastic retainer strap is used to prevent inhaling or exhaling through the nose. The Quick2™ filter system is positioned in front of and below the wearer's mouth. In this location, the filter assembly does not interfere with outward vision or the ability to sight a weapon. The high performance filter system provides protection against a wide range of deadly particles and gases. The Quick2™ cartridge includes a plenum chamber to distribute contaminated air evenly over all of the packed carbon material. An exhalation valve is also included to reduce breathing effort. A large area particulate filter is HEPA rated to remove small particles and also provides a low level of breathing resistance.

Each Quick2™ unit is individually packaged and sealed in a non-reusable vacuum bag (airtight/waterproof/hermetically sealed with an easy open tear notch) and has a five (5) year shelf life. Costs associated with fit testing, maintenance and decontamination are eliminated. The "One Size Fits All" feature greatly simplifies the logistics of providing chem-bio protection to dependents and support personnel.

Pricing:

QM-1	Quick2 Instructional Video	$ 7.00
QM-2	Quick2 Mask	$98.00
QM-3	Quick2 Practice Model Mask	$29.50
QM-4	Quick2 Chem-Bio Quick Gloves	$15.00
QM-5	Quick2 Single Pocket Carry Case	$12.00
QM-6	Quick2 Dual Pocket Carry Case	$18.00

NOTE: The QM-4 Gloves fit inside the dual pocket case. The QM-5 and QM-6 can be worn on a belt or carried in a purse. The QM-6 holds the mask and the gloves.

TO ORDER OR FOR LARGER QUANITY DISCOUNT PRICING CALL:
METTAG PRODUCTS 1-800-425-5397 OR (904) 964-5397

Have you visited the TACDA Store lately?

In addition to store items shown in this *Journal*, other available store items are listed below. Remember that all purchases help to raise funds for the TACDA mission:

Sun Ovens: **$229 + shipping ($25 less for TACDA members)**

Aquaflex Water Bags in sizes from 30 to 350 gallons: **$58 + shipping for 110 gallon bags, $79 + shipping for 200 gallon bags, $129 + shipping for 300 gallon bags (other sizes available).**

Water Barrels: **$35 + shipping for 55 gallon barrels, $29 + shipping for 30 gallon barrels, $24 + shipping for 15 gallon barrels. (for TACDA members)**

Airtight foodgrade 5 and 6 gallon pails: **$57 for six 5-gallon pails with lids $63 for six 6-gallon pails with lids (prices include ship. within 48 states)**

The Hive: **$1,899 + shipping for a 9.5' L x 7.33' W x 7.5' max height underground storage and protection shelter.**

Direct Reading Dosimeters, charger, and rate meter: **$85 + shipping for each model (for TACDA members).**

Potassium Iodate: **$16.95 + shipping (a better alternative to Potassium Iodide)**

Plus water filters, books, and more!

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

* Prices/availability subject to change without notice.

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