



Journal of Civil Defense

May/June 2005
Volume 38, Issue 3

Inside This Issue

Annual Board of Directors Meeting (page 3)

Message From The President (page 4)

Letter From The Editor (page 5)

"EMP" Spotlight (page 6)

"EMP" Threat Analysis Resource (page 7)

"EMP" Study (page 9)

Living A Sheltered Life (page 11)

Focus On Public Safety (page 13)

Practical Personal Preparedness (page 17)

Radio Active (page 18)

TACDA 4 KIDS (page 19)

The News Stand (page 20)

Book Review (page 22)



TACDA™
11576 S. State St.
Suite 502
Draper, UT 84020
www.TACDA.org
info@TACDA.org
(800) 425-5397
(800) 403-1369 (Fax)

EMP

Electro Magnetic Pulse
(pages 6-11)



Your Ultimate Resource For Medical Emergency Triage Tags (METTAG)™

METTAG II (CB-100) - Designed Specifically for NBC Response Applications

Efficient and effective triage during mass-casualty incidents (MCI) has proven to save lives. Medical Emergency Triage and Identification Tags (METTAGs) have historically been used worldwide in MCIs ranging from automobile and aircraft accidents involving several victims, to large-scale terrorism incidents. With rising concerns of how to effectively handle triage situations involving HAZMAT, terrorism, and possible use of weapons of mass destruction, the need for an alternative triage tag has emerged. The CB-100 Triage/Identification Tag was designed to meet the needs of the growing complexities and dangers of the modern triage environment.

METTAG II (CB-100)



Site Mark or Property Tag Patient #: 
HAZMAT? Y / N (if yes, see back)

Personal Property Tag Patient #: 
HAZMAT? Y / N (if yes, see back)

Commander's Log Patient #: 
Status (circle): Red Yellow Green Black HAZMAT? Y / N
Name: _____ Sex: M / F Age: _____
Sent to: _____ Time: _____
Transport by: _____

For Ambulance Use Patient #: 
HAZMAT? Y / N (if yes, see back)
DECON? Y / N (if yes, see back)

METTAG 2 Patient #: 
CHEM / BIO Triage Tag Patient keeps this strip 

HOSPITAL RECORD Patient #: 
Sex: M / F Pregnant? Y / N Age: _____
Patient Name: _____ Date: _____
Address: Street: _____
City: _____ State: _____ Zip: _____
Notify Tele: _____ Name: _____ Relation: _____

Zone Authorized? Patient | EMS | Other: _____
By: _____ Authorized in: Hot Warm Cold

V. Signs	Time	BP	Pulse	Resp.	Alert Response
					Alert Verb. Pain Un.
					Alert Verb. Pain Un.

Med. History: Rx / Allergies / Problems? _____

Front Eval  **Back Eval**

Triage Status Log		
Time	Initials	Status
		RYGB
		RYGB
		RYGB

HAZMAT? Y / N / ? (if Y or ?, see back) Note time and status above.
DECON? Y / N (if Y, see back) Remove appropriate tag(s) below.
Note changes above.

USE ONLY UNDER GUIDANCE OF LOCAL AUTHORITIES. MAY NOT DUPLICATE
FOR OFFICIAL USE ONLY © March 2004 The American Civil Defense Association

0	EXPECTANT	X if dead: <input type="checkbox"/>	
1	IMMEDIATE		
2	DELAYED		
3	MINIMAL	X if no injuries: <input type="checkbox"/>	

Site Mark or Property Tag

Notes/HAZMAT:

Personal Property Tag

Notes/HAZMAT:

Commander's Log

Notes/HAZMAT/DECON:

For Ambulance Use

Notes/HAZMAT:

Safety Issues Notes:

A-E Triage System™

EMT/MD/Org.

Name:

EMT/MD/Org.

Name:

Badge #:

A1 Assess Risk If danger, get all patients to safe triage/DECON area

A2 Assess Priority 1st. Send ambulatory patients to GREEN area.

2nd. Check those not moving or not alert. 3rd. Check all others

B1 Breath If not breathing, repo airway. If still not breathing, tag **Expectant**.
Tag **Immediate** if major breathing problem (aver. > 1 breath per 2 secs)

B2 Bleeding Control major bleeding. If can't, tag **Expectant**. If weak pulse
or capillary refill takes > 2 seconds, tag **Immediate**

C Categorize Remainder If not alert & life is threatened tag **Immediate**
If serious, but no immediate threat to life, tag **Delayed**
Non-serious injuries or no injuries, tag **Minimal** (if no injuries, note on front)

D Decon (check boxes, if done): ☐ **Gross Decon**: Do upwind. Scrape
away gross HAZMAT. Remove contaminated clothes & protective gear,
watches etc. Cut away clothing if needed to prevent further skin contact.
Wash hands. ☐ **Secondary**: Use skin decon kit if available. If whole
body exposure, use copious soap/water shower/spray. Chemical decon
with 0.5% solutions (e.g. 1 part bleach/10 parts water) - not in eyes or
open body cavities. Flush eyes with water. Put on fresh clothes.

HAZMAT/Decon notes:

E Evacuate: Check for dangerous items & HAZMAT status? If safe,
check box ☐ If not, explain:

Treatment Type	Amount/Rate/Etc.	Time	Initials

For more information or training materials call TAGDA / METTAG Products Inc. at
1-800-425-5397 or visit our website at WWW.TAGDA.ORG or WWW.METTAG.COM

0 **EXPECTANT**

Notes:

1 **IMMEDIATE**

Notes:

2 **DELAYED**

Notes:

3 **MINIMAL**

Notes:

VISIT www.METTAG.com FOR MORE INFORMATION



TACDA 2005 Board Meeting

We would like to invite you all to attend our annual TACDA Board meeting, to be held on Friday, July 15 at 7:30 pm at The Orleans Hotel in Las Vegas, Nevada, preceding the Doctor's for Disaster Preparedness (DDP) Conference, held July 16-18 at The Orleans Hotel.

Many of you may already be members of DDP and planning to attend this great conference. DDP always has excellent presentations with interesting speakers covering natural and man made disasters, national defense and environmental issues. Dr. Jane Orient, president of DDP, continues to produce the excellent 'Civil Defense Perspectives' newsletter which so perfectly supports our TACDA mission.

This year Dr. Orient has arranged for presentations by Jack Dini, past president of AESF; Dr. Sally Baliunas of the Harvard Smithsonian Astrophysical Observatory; Dr. Willie Soon of the Harvard Smithsonian; Dr. Greg Canavan giving an update on Strategic Missile Defense; Dr. Fred Singer who pioneered rocket and satellite technology; Dr. Kenneth Green of the Fraser Institute; Paul Driessen of the Center for The Defense of Free Enterprise; Dr. Jay Lehr, science director of the Heartland Institute; Dr. Ruth Weiner speaking on Nuclear Waste Disposal; Dr. James Muckerheide speaking on the benefits of low-dose radiation; Steven Milloy publisher of JunkScience.com; Sharon Packer & Paul Seyfried speaking on Civil Defense issues; Dr. Howard Maccabee in remembrance of Edward Teller; and Dr. Art Robinson giving a report on American Science.

There will also be a special tour of the Nevada Test Site on Monday morning, July 18.

The price of the DDP conference is \$150 which includes all speeches, receptions, two luncheons and a Saturday evening banquet. Send your registration fee to DDP; 1601 N Tucson Blvd.; Suite 9; Tucson, AZ 85716 or call (520) 325-2680 for more details.

Limited special room rates are available for the DDP annual meeting. Make your reservations now by calling The Orleans Hotel (800-675-3267).



DISCLAIMER

Statements and opinions expressed in this or previous publications of the Journal of Civil Defense™ are those of the author(s) and do not necessarily reflect the official position of The American Civil Defense Association (TACDA™), the editors, the Board of Directors, or the organizations with which the authors are affiliated. The editors, publisher, and TACDA™ disclaim any responsibility or liability for such material and do not guarantee, warrant or endorse any product or service mentioned. Official positions of TACDA™ are established only by its Board of Directors.

© 2005 TACDA™

All Rights Reserved. No part of this publication may be reproduced, stored in a retrieval system or transmitted in any form or by any means, electronic, electrostatic, magnetic tape, mechanical, photocopying, recording or otherwise, without permission in writing from the publishers.

Message From The President



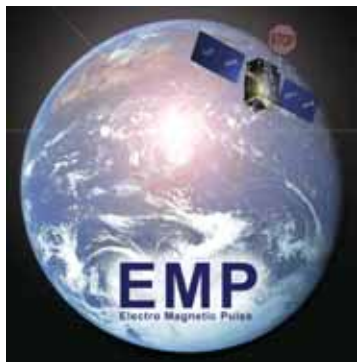
Sharon Packer - TACDA President

Dear TACDA Members,

We have received much welcomed feedback on the new design and layout of the Journal of Civil Defense (JCD). We appreciate the article submissions we have received from many of you, and have published several of these in this issue.

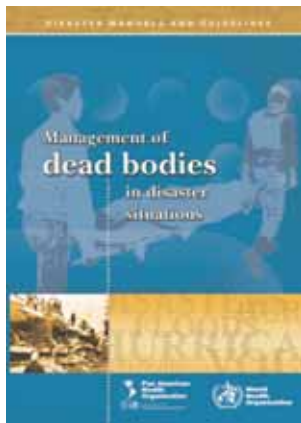
One piece, submitted by Alexis, one of our college students, has been featured in the **Practical Personal Preparedness** column, and provides some good suggestions on food and water storage for apartment dwellers. Stay tuned to this same column in the July/August issue for a review of an excellent book entitled "Plan Not Panic!" written by Barbara Salsbury. We truly appreciate her wonderful contributions to the JCD thus far, and hope to continue to glean from her expertise and abundant knowledge in the world of practical preparedness and self-reliant living. Thank you Barbara.

The main theme of this issue of the JCD is the **Electromagnetic Pulse (EMP)** threat.



Much has been written of late on this insidious threat, however very little is being noted in the media of practical preparedness solutions that we can observe. We hope you will read this series of articles and take note of the suggested possibilities for EMP protection laid out in our **Threat Analysis Resource** column. We gladly welcome any EMP-related preparedness suggestions or informational articles from you, our readers, as well.

We have also included another article in this issue's **TACDA for Kids** column, written by 13-year-old Joshua, on weapons effects. Joshua took a copy of the JCD to school and shared it with his classmates and teachers. We would love to receive some additional civil defense and disaster preparedness articles, ideas and comments from the perspectives of our youth.



We have included a review of the book entitled, "Management of Dead Bodies in Disaster Situations", reviewed by William Perkins, one of our TACDA Board of Directors. If you have ideas or suggestions for books that you would like for us to review, or if you would like to submit a book review of your own for consideration, we encourage you to forward the request to our editorial department via email at jcd@tacda.org.

I encourage you to check out my article in this issue entitled "Shelter Construction Materials". Next issue, I will investigate the importance of geometry in the design of your shelter. If you have other requests

for sheltering-related content, please forward those comments and suggestions to us as well.

We continue to provide important insight in our **Focus on Public Safety** column, which, in this issue, focuses on the challenges faced by hospitals and emergency care providers to remain functional and effective in the event of large-scale disasters involving mass injuries. Many of our readers work in the emergency management, public safety and healthcare fields, whom we consider to be our heroes. We would like to receive some feedback and articles from them on issues pertaining to public safety.

It is our goal and priority objective to serve you, our TACDA members, in the best and most effective way possible. Please continue to assist us in this effort by keeping us informed of your civil defense 'wish lists', and providing us with your feedback, ideas and suggestions.



We love our great country and continue to support our government in their desire and efforts to keep us safe and free. However, remember that it is important for us to do our part as well. So be sure to **STOP (Study! Think! Observe! and Prepare!)**.

Sincerely,
Sharon Packer, TACDA President
spacker@tacda.org

Remember, If you are prepared, you have no need to fear.



Alex Coleman - TACDA Journal of Civil Defense Editor

Dear Reader,

Over the last two months we have gained many new TACDA members and have had several requests for TACDA Chapter memberships. The **TACDA Local Chapter Program** will be the national vehicle to bring information on civil defense issues to every chapter member.

We believe that you will find membership in a TACDA Chapter to be a very fulfilling, rewarding and beneficial experience.

There are many advantages to establishing a new, or joining an existing TACDA Chapter. For example, chapter leaders will have access to a speaker's bureau, videos, transparencies, lesson plans and slide presentations. Members will be able to contact families that have actually built and stocked shelters, giving them the opportunity to benefit from their wide and varied experiences. You will have the companionship of like-minded people, which brings both comfort and synergism to your civil defense efforts. An additional benefit of TACDA chapter participation is that your chapter unit will also receive a percentage of your yearly membership dues to help fund special projects and other events for your chapter.

I am confident that TACDA chapter memberships will become large

enough that we can influence state and federal civil defense programs. The first goal should be to make shelter construction tax- deductible to

- **Chemical/Biological Terrorism**
- **Natural Disasters (before, after, during)**



the owner. We want to try to get funding for education of school children (all ages). Ultimately, we want a funded shelter program for all US citizens.

TACDA Chapter 0001, the Civil Defense Volunteers of Utah (CDVU), has offered their assistance in preparing our Chapter material packet. We thank them for their unanimous support in this effort. They have produced lesson materials, supporting visual effects, transparencies, and a CD of weapons effects slides for your use.

We are currently reviewing and readying 12 lessons for chapter use and will make these available to each TACDA chapter beginning August 1, 2005. We welcome your input and hope you will send us your feedback concerning other materials and resources that you would like to see introduced as a part of the program. The lessons we are currently developing are:

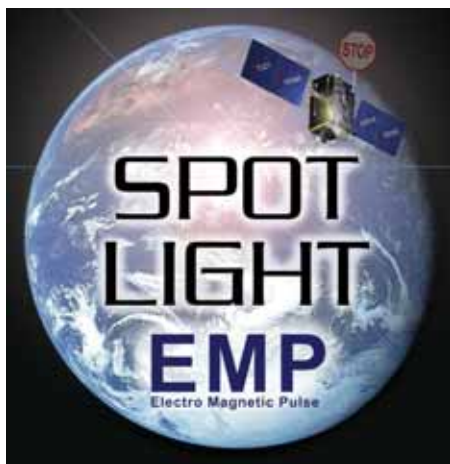
- **Nuclear Weapons Effects**

- **Radiological Monitoring**
- **Food Storage**
- **First Aid (including radiation sickness & thermal burns)**
- **Water Storage**
- **All Hazard Shelter Construction**
- **Post War Survival**
- **Cold Weather Survival**
- **Emergency Communications & Power Sources**
- **Preparing Neighbors To Help Neighbors**

Also included in your initial TACDA Chapter packet will be information on governing your Chapter with Strategic Action Plans, Bylaws, Articles of Incorporation, and directions for becoming an independent non-profit organization.

We look forward to receiving your input and feedback concerning the **TACDA Local Chapter Program**.

Kindest Regards,
Alex Coleman, Editor
alex@tacda.org



***Unready For This Attack
By U.S. Senator Jon Kyl
Chairman of the Senate Judiciary
Subcommittee on Terrorism, Tech-
nology and Homeland Security
April 16, 2005***

Recently a Senate Judiciary subcommittee of which I am chairman held a hearing on a major threat to the American people, one that could come not only from terrorist organizations such as al Qaeda but from rogue nations such as Iran and North Korea.

An electromagnetic pulse (EMP) attack on the American homeland, said one of the distinguished scientists who testified at the hearing, is one of only a few ways that the United States could be defeated by its enemies -- terrorist or otherwise. And it is probably the easiest. A single Scud missile, carrying a single nuclear weapon, detonated at the appropriate altitude, would interact with the Earth's atmosphere, producing an electromagnetic pulse radiating down to the surface at the speed of light. Depending on the location and size of the blast, the effect would be to knock out already stressed power grids and other electrical systems across much or even all of the continental United States, for months if not years.

Few if any people would die right away. But the loss of power would

have a cascading effect on all aspects of U.S. society. Communication would be largely impossible. Lack of refrigeration would leave food rotting in warehouses, exacerbated by a lack of transportation as those vehicles still working simply ran out of gas (which is pumped with electricity). The inability to sanitize and distribute water would quickly threaten public health, not to mention the safety of anyone in the path of the inevitable fires, which would rage unchecked. And as we have seen in areas of natural and other disasters, such circumstances often result in a fairly rapid breakdown of social order.

American society has grown so dependent on computer and other electrical systems that we have created our own Achilles' heel of vulnerability, ironically much greater than those of other, less developed nations. When deprived of power, we are in many ways helpless, as the New York City blackout made clear. In that case, power was restored quickly because adjacent areas could provide help. But a large-scale burnout caused by a broad EMP attack would create a much more difficult situation. Not only would there be nobody nearby to help, it

could take years to replace destroyed equipment.

Transformers for regional substations, for example, are massive pieces of equipment that are no longer manufactured in the United States and typically take more than a year to build. In the words of another witness at the hearing, "The longer the basic outage, the more problematic and uncertain the recovery of any [infrastructure system] will be. It is possible -- indeed, seemingly likely -- for sufficiently severe functional outages to become mutually reinforcing, until a point at which the degradation ... could have irreversible effects on the country's ability to support any large fraction of its present human population." Those who survived, he said, would find themselves transported back to the United States of the 1880s.

This threat may sound straight out of Hollywood, but it is very real. CIA Director Porter Goss recently testified before Congress about nuclear material missing from storage sites in Russia that may have found its way into terrorist hands, and FBI Director Robert Mueller has confirmed new

(Continued on next page)



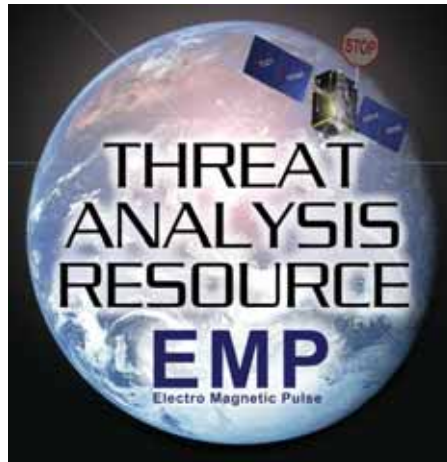
(EMP Spotlight continued)

intelligence that suggests al Qaeda is trying to acquire and use weapons of mass destruction. Iran has surprised intelligence analysts by describing the mid-flight detonations of missiles fired from ships on the Caspian Sea as "successful" tests. North Korea exports missile technology around the world; Scuds can easily be purchased on the open market for about \$100,000 each.

A terrorist organization might have trouble putting a nuclear warhead "on target" with a Scud, but it would be much easier to simply launch and detonate it in the atmosphere. No need for the risk and difficulty of trying to smuggle a nuclear weapon over the border or hit a particular city. Just launch a cheap missile from a freighter in international waters -- al Qaeda is believed to own about 80 such vessels -- and make sure to get it a few miles in the air.

Fortunately, hardening key infrastructure systems and procuring vital backup equipment such as transformers is both feasible and -- compared with the threat -- relatively inexpensive, according to a comprehensive report on the EMP threat by a commission of prominent experts. But it will take leadership by the Department of Homeland Security, the Defense Department, and other federal agencies, along with support from Congress, all of which have yet to materialize.

The Sept. 11 commission report stated that our biggest failure was one of "imagination." No one imagined that terrorists would do what they did on Sept. 11. Today few Americans can conceive of the possibility that terrorists could bring our society to its knees by destroying everything we rely on that runs on electricity. But this time we've been warned, and we'd better be prepared to respond.



Practical EMP Protective Measures **By Sharon Packer (TACDA Pres.)**

The electromagnetic pulse (EMP) is a strong electrical field, associated with all high explosives. These induced currents and voltages cause malfunctions of electrical equipment. Nuclear explosions of all types are accompanied by an EMP, the intensity and duration of which are dictated by the height of the detonation.

The energy from an EMP is collected in any long runs of wire, exposed cable runs, piping or conduit, large antennas, power and telephone lines, or long runs of electrical wiring in buildings and can be of the order of 60,000 volts per meter.

The collectors act to magnify the weak EMP just as a magnifying glass does to sunlight. The longer the collector, the greater the amount of energy collected. The energy collected is sufficient to cause damage to attached electrical and electronic equipment.

All unprotected solid-state electronics systems are vulnerable. It is possible that some of the computerized ignitions in our vehicles would fail. Most relay stations required by 2-meter amateur radios and mobile phones would cease to function.

It is likely that a large yield, high-altitude EMP weapon would be detonated during the first minutes of a nuclear attack. It could affect an area of several thousand miles in diameter. This type of weapon could be deployed on a ballistic missile or by satellite. Neither blast nor radiation damage would be associated with a high altitude electro magnetic pulse (HEMP).

It is also possible that a smaller range EMP attack could come via terrorists. Several rogue nations and terrorist groups have or will soon have this capability.

Listed below are seven anti-EMP actions that should be considered:

1. Maintain a supply of spare parts for radios and automobile computerized ignitions.
2. Always keep ham radio base stations completely disconnected from their power source when not in use.
3. Purchase several inexpensive CB and short wave radios and store your radios and other sensitive equipment in a faraday cage such as an old microwave oven or a metal drum with a tightly fitting lid. These radios can be purchased from your local electronics store or on the Internet for as low as \$20.00, depending on the capabilities and features desired.
4. In an escalating crises, shift to emergency power at the earliest possible time.
5. If radio communication is essential during threat period, use only one system at a time. Disconnect all other systems from antennas, cables and power.

(Continued on next page)

(EMP Threat Analysis Resource contd.)

6. Purchase 40 to 80 meter amateur radios. These frequencies do not rely on relay stations and will continue to function properly when protected in a faraday cage.
7. Protect your generators by placing chicken wire fencing under and around the generator. Keep the cords wound and inside the wire cage. If you do not have a generator, you can purchase one from most home supply company's such as The Home Depot or Lowes, or from numerous suppliers on the Internet. Generators generally range in price from a few hundred dollars up to several thousands of dollars, depending on features and power output capabilities.

Build a simple faraday cage from a small metal garbage can and lid. The lid must fit snugly over the can. If the

lid does not make perfect metal-to-metal contact, the open area will act as a 'slot antennae' and allow EMP to damage your equipment.

To further protect your equipment, purchase a metal screen about 6 inches wide and as long as the circumference of the can. Fold the metal screen in half-length wise and place it around and over the lip of the garbage can. The lid should then fit snugly against the screen and can, protecting all equipment contained inside the can.

Any metal can will act as a faraday cage. However, good metal-to-metal contact is imperative. If the can has been painted, make sure to remove the painted area around the lid with sand paper.

EMP can act as an early warning system. Commercial power is likely to be lost, so every instance of power failure should be suspected as a possible attack warning. Certain simple tests will quickly reveal an EMP.

1. You may see an unusually bright light, which lasts longer than lightning. If this light is associated with a power failure, it should be considered as a possible EMP detonation. Do not look directly at the light, as it may damage your eyes. Not all areas of the United States would see the light, depending on their physical distance away from the location where the blast occurs.
2. Check the telephone for a dial tone. A telephone usually does not fail in a simple power failure, but it would most probably fail in an EMP. However, some phones do fail regularly and test #3 should be used to confirm this failure.
3. Only 5 percent of the radio stations in the nation have been hardened against EMP. After an EMP most of the radio stations would lose trans-



(Continued on next page)

(EMP Threat Analysis Resource contd.)

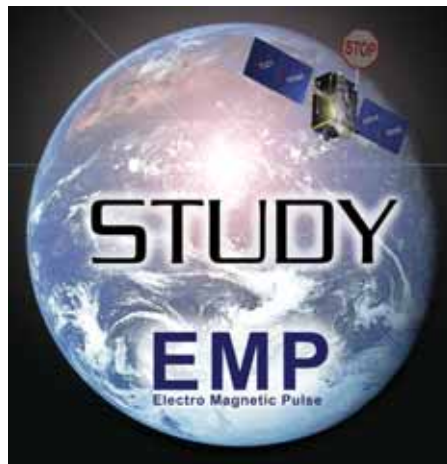
mission. Whenever there is a power drop, a battery-powered radio should be used to check for loss of transmission. A simple lightning strike could take out one station, but only an EMP would take out a large number of the radio stations. This transmission failure would be a good indication that an attack is eminent. Keep a small transistor radio wrapped in aluminum foil for this purpose.

The flight time of a missile from a submarine varies with the distance from the coast. Washington D.C. may only have a two minute warning. Mid-continent states would receive about 8 minutes warning time before the first submarine launched ballistic missiles (SLBMs) could arrive. The ICBMs would arrive in that area about 25 minutes later. These few minutes should be used to find expedient sheltering if away from home, or to quickly access a permanent shelter.

If time permits, gas lines to the home should be turned off and curtains or drapes closed to protect against the thermal pulse. Since the end of the cold war, indications are that the Soviet submarines are no longer at close range and the SLBM's would have a flight time similar to the ICBM's. However, all haste should be made to reach shelter as quickly as possible.

If the EMP occurs during the night, it would be difficult to observe. A simple power drop alarm can be constructed from a battery and horn to awaken those who are sleeping. Look for directions for constructing this EMP alarm online.

[Source: The American Civil Defense Association (TACDA)]



Panel Says Society at Great Risk from Electromagnetic Pulse Attack By Daniel G. Dupont

[Editor's Note: The following referenced report on the threat of an EMP attack on the U.S. was presented to Congress during the summer of 2004. EMP still remains a current and critical concern to our government and to us, personally, thus, we offer this article for your consideration. Please, see this issue's Spotlight column for more in-depth comments from Senator John Kyl's congressional address.]

A congressional commission is expected to tell lawmakers next week that the "continued existence of civil society" is at significant risk from the threat of high-altitude nuclear explosions, according to sources and documents.

The commission, which was established by Congress in the fiscal year 2001 Defense Authorization Act, will present its findings at a July 22 House Armed Services Committee hearing, which will begin in open session and finish behind closed doors. Those findings highlight what the commission says are deficiencies in the U.S. government's readiness for such attacks, sources say.

High-altitude electromagnetic pulses are byproducts of nuclear explosions in space. They can wreak havoc

when they reach the Earth, where critical infrastructure is insufficiently hardened and recovery plans are incomplete or nonexistent, according to commission staff members and documents.

"HEMP is one of a small number of threats that can hold at risk the continued existence of civil society within the United States, and our ability to maintain national security and project military power anywhere it is needed," commission members state in a briefing obtained by Inside the Pentagon.

Additionally, the briefing states, "America's ability to reconstitute following such an EMP attack is inadequate; full recovery might take months to years. This threat also places our national economy and worldwide military forces at risk."

The briefing was delivered to the Securities Industry Automation Corporation, which bills itself as the "technology nerve center of Wall Street." SIAC is responsible for computer systems and communications networks that underpin the operations of the New York Stock Exchange -- an infrastructure that could be at risk from EMP attacks.

The briefing is dated Jan. 20, but sources close to the commission say the findings and conclusions it details are little changed in the final report, which will be released next week.

"Everything in January is still accurate," said Lisa Wright, spokeswoman for Rep. Roscoe Bartlett (R-MD), a member of the House Armed Services Committee who has long spoken of the danger of EMP attacks. Wright added that the final report will contain "more and new information."

The commission's work was largely finished months ago, but security issues have delayed the release of the final report, as well as the hearing, originally scheduled for April 22. The Pentagon believes inform-

(Continued on next page)

(EMP Study continued)

ation about the threat of EMP weapons and high-altitude nuclear explosions is highly sensitive.

HEMP, according to the commission briefing, results from the detonation of nuclear weapons 40 kilometers above the Earth and higher.

These effects were first observed in nuclear tests conducted by the United States and the Soviet Union in the 1950s and early 1960s. While EMP effects do not directly harm people, they can damage and disrupt electronics.

The Pentagon has long feared that potential adversaries with even crude nuclear weapons and missile technology could explode those weapons in space. According to the commission, the United States is at significant risk from even moderately sized weapons.

"We are vulnerable to a 'cheap shot' as well as to a high-tech threat," the briefing states.

"For adversaries, including rogue states [and] terrorist entities with even one or two weapons, HEMP is one of the few options available that could create widespread and serious damage" to the United States and others, it continues.

To conduct its study, the commission worked closely with the intelligence community to discuss threats and the countries or groups that might have access to nuclear weapons and missiles. According to its briefing, "a number of potential adversaries can make devastating EMP attacks today; more will be capable of posing this threat over the next 15 years. Potential adversaries are aware of this strategic attack option."

The commission then looked at the infrastructure that might be affected by EMP attacks -- power grids, telecommunications systems, financial markets and networks, transportation, energy distribution, emer-

gency services and the military, among others. Its briefing notes that

U.S. infrastructure is increasingly dependent on microelectronics in computers and other systems, making facilities and systems "simultaneously at serious risk over a large geographic area."

Sources close to the commission say it even undertook some tests to gain firsthand knowledge of EMP effects on such infrastructure, although testing details are not divulged in the briefing. It does, however, state that the commission's testing results "indicate greater vulnerability of control and communications systems."

One of the factors that concerned the commission most is the "interdependence" of such systems. In a diagram contained in the briefing, the panel shows how the oil and gas industry, for example, is connected in various ways to power plants, the transportation industry, communications systems, even legislative offices and military installations.

Similarly, banking and finance are tied to various industries and government entities. An EMP attack, accordingly, would cut a wide swath across the economy and society even if its direct effects are felt only in one or two areas, the commission states.

Such interdependencies were noted following the Sept. 11 attacks, as the commission points out. But while the U.S. economy bounced back well after those events, the panel believes an EMP attack could make recovery much more difficult -- especially if the power system is hit hard.

"The loss of power beyond emergency power supplies may well cripple financial systems, telecommunication, health care, emergency response, government control, water and food supplies and other critical societal functions -- a potentially escalating rather than diminishing situation," the briefing states.

In one scenario outlined by the commission, a nuclear device detonated at a high altitude above Chicago would immediately affect most significantly an area of approximately 900 miles -- encompassing both Washington, DC, and New York. This area holds a "majority" of the U.S. population and accounts for 70 percent of U.S. power generation and consumption; 70 percent of the country's high-voltage power transformers; 50 percent of continental U.S. telecommunications equipment; and 60 percent of major Internet hubs, the briefing states.

The commission says a blackout of the power grid would be "virtually certain" following such an attack. Moreover, the briefing states, the panel predicted a "high proportion of computers" and other systems would be affected; major telecommunications would be interrupted; many high-frequency, VHF and UHF receivers would be damaged; and cell phone, satellite and Internet communications would be hindered.

Other infrastructure impacts could include damage to fuel supply and refineries, the transportation system, water supply and sanitation, chemical plants, financial systems, health care, emergency response and "government integrity."

Later EMP effects could do further damage to power and electrical transmission components. These effects might include ground-induced currents sent through long transmission lines -- currents "similar to but several times larger than those that caused the 1989 Hydro Quebec collapse," the briefing states, referring to a complete blackout of the province of Quebec caused by a naturally occurring geomagnetic storm. The commission notes that the effects of such storms are similar to EMP.

"Widespread power failure following EMP attack [is] inevitable," the briefing states.

(Continued on next page)

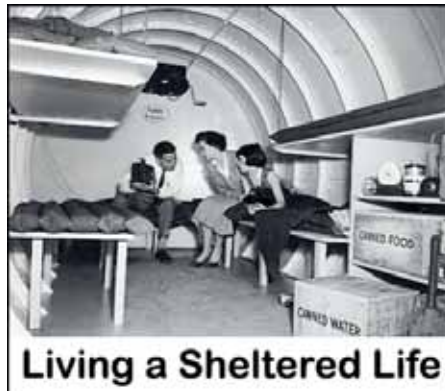
(EMP Study continued)

In the briefing's concluding pages, the commission turns to recommendations and conclusions, including its belief that the U.S. government must act now to "impede capability to inflict assault before it becomes more robust." Industry and government must work together to reduce vulnerabilities and develop standards to implement in the course of normal upgrades to critical systems, the commission asserts.

"Plans and procedures have not been developed to restart the national power grids" in the event of a shutdown, the briefing concludes. "The financial system of the United States is vulnerable to an EMP-induced disruption of telecommunications. The transportation industry is vulnerable to disruption."

As for the "interdependencies" at work in U.S. and global infrastructures, the commission believes there is no "credible" means of predicting the full range of possibilities that could result from an EMP attack. Finally, it says the capability of the U.S. "scientific and technical community" to address these possibilities and the threat of nuclear weapons in general "has diminished to the point where its continued viability is questionable."

The commission was chaired by William Graham, former science adviser to President Reagan. Next week's hearing is expected to begin with an unclassified, open session and conclude behind closed doors so the committee can hear classified testimony, a commission source said.



Shelter Construction Materials By Sharon Packer – TACDA Pres.

In this issue, we would like to more specifically investigate the building materials for hardened nuclear shelters. Always consult an architect and civil engineer for your shelter designs, construction materials and shelter location.

We will consider five basic materials--steel plate, corrugated steel, insulating concrete forms, concrete block and poured concrete.

Steel Plate:

Arched steel plate shelters make excellent 'all hazard shelters'. Eight-foot diameter shelters should have a minimum of 1/4" thick walls; nine-foot diameter shelters, 3/8" walls; and ten-foot diameter shelters, 1/2" walls. All entrances should be constructed of 36" to 48" diameter steel plate, with a minimum of 1/4" walls. One-quarter inch thick mating flanges should join all entrance parts for ease in field assembly. Steel shelters need an epoxy coating on all exterior surfaces. Do not fabricate shelters from used tanks. Used tanks can harbor residue and fumes from chemicals that are carcinogenic or otherwise deleterious.

Corrugated Steel:

Arched corrugated steel shelters have been tested to 150 psi. Documentation of these tests can be found in U.S. ORNL Document AD-A 178 152. Shelter bodies up to 8-foot diameter should be constructed from at least 16-gauge steel; nine-foot

diameter shelters, 14 gauge; and ten-foot diameter shelters, 12 gauge. Entrances should be constructed of 36 to 48 inch diameter corrugated steel, in a minimum of 16 gauge. Banding kits joining all entrance pieces must engage at least two full corrugations. All welding on corrugated steel must be done commercially by certified welders. Welding on corrugated steel is very dangerous and the zinc fumes can cause serious injury or illness. End plates should be constructed of 3/8 inch steel plate and welded to the culvert end with a one-half inch overlap. All welds, as well as outside surfaces of all steel plate ends should be painted with an epoxy coating. All floor braces, electrical unistrut and furniture should be bolted to the structure. Large washers should be placed on the outside of the structure and all penetrations must be sealed with silicone.

Isolating Concrete Forms (ICF):

Joseph Lyman submitted a fine report on these forms to TACDA. The full report is available to download anytime from the TACDA web site at www.tacda.org/resources/icf.pdf.

The forms are made of foam insulation (expanded polystyrene) and are either pre-formed as interlocking blocks or constructed as separate panels connected with plastic or metal ties. The forms are designed to be left in place where they will form an insulation and sound barrier. Tests done at Quantico Marine Corps Base in Northern Virginia show good blast protection benefits. The forms from this test were reinforced with 3/4 steel bars at 16" centers and filled with 3/8" aggregate with 4,000 PSI concrete mix. However, no specific over-pressure protection level was given in the report. We believe these forms should be considered when retrofitting basements for shelter space. They are easily handled and eliminate the need for forming concrete walls. They are not as

(Continued on next page)



(Living a Sheltered Life continued)

dense as concrete walls, and walls must be thickened accordingly. A good engineer can help you to design your space to carry a steel reinforced concrete ceiling. These ICF forms can also be used for building underground shelters.

Concrete Cinder Block:

Cinder blocks are masonry units made of concrete, often mixed with coal cinders. They are usually hollow with holes on two sides. This lightweight block provides poor radiation shielding. If using the block on interior walls of a basement shelter, the walls must be made thicker to provide the same radiation protection as would be found in a poured concrete wall. Figure a ratio of the weight of the block compared to the weight of the poured concrete (144 lbs./ft. cubed) and increase the wall thickness accordingly (if the weight of the poured concrete is twice the weight of the cinder block, then build the wall twice as thick as would be required in a concrete wall). The blocks generally come in a 16x8x8 in. size (after figuring mortar joints).

Some blocks are designed to be reinforced with steel rebar to increase their strength. Figure door spaces carefully, as it is difficult to cut openings after the wall is in place. These blocks are not as strong as ICF block, and we do not recommend their use for underground shelter construction.

Poured Concrete Septic Tanks:

These tanks are generally not steel reinforced and are 'thin' walled. They will not carry the proper amount of soil for radiation protection. They are very vulnerable to ground shock and would not be safe in areas of blast potential. They are vulnerable to ground movement in earthquakes and can crack or even fail catastrophically. They are not watertight. Top entrances expose occupants to radiation and it is difficult to get a side entrance into the tank.

Reinforced Concrete:

The following minimum concrete shelter requirements are based on a blast protection of 15 psi. Internal structural support of the ceiling will be needed. Consult your engineer for design parameters. Please watch for

a more detailed article on hardened,

40 psi concrete structures in the July/August issue.

Above ground concrete shelters must have a wall thickness of 31" minimum and a ceiling thickness of 22". Underground concrete shelters must have a ceiling of 22" concrete, or a combination of concrete and dirt cover as follows:

- 16" concrete, 8" earth
- 12" concrete, 16" earth
- 8" concrete, 28" earth

Shelters under a one-story building must have ceilings of 16" concrete. Shelters under a two-story building must have 14" concrete ceilings. Internal shelter walls that face unprotected basement areas must be 10 to 20 inches thick, depending on window and door openings in the unprotected areas.

Concrete Ceilings:

All concrete ceilings must be constructed of poured, reinforced concrete. Great care must be taken to properly form the ceiling for the concrete load. Do not use pre-cast concrete beams. These beams are constructed of a lighter weight concrete and will not provide the radiation shielding needed. These beams are not attached to their support walls and can slip off their support walls during earthquake or blast movement. In addition, these pre-cast beams are hollow and are not designed to carry the concrete ceiling loads needed in the above scenarios.

[Source: *The American Civil Defense Association (TACDA)*]





Hospital Preparedness in Large-Scale Disasters **By Joseph Scanlon**

At 9:04:35 a.m., December 6, 1917, *Mont Blanc*, a French ship carrying a deadly mixture of aviation gasoline, chemicals, gun cotton and TNT exploded in the inner harbor of the Eastern Canadian city of Halifax, Nova Scotia.

The blast – one-seventh the power of the first atomic bomb – sent a series of shock waves through the city that smashed windows, sending glass into the eyes of those who had been watching the burning ship, and turned over stoves, starting fires in thousands of wooden houses.

It is estimated that 1,963 persons died as a result of the explosion and between nine and ten thousand were injured, many blinded or burned or both. That is roughly one-fifth of the city's population of 60,000; and it does not include the tens of thousands who were left homeless.

In 1917, Halifax was fairly well supplied with hospitals. In addition to the Royal Victoria, there was also Camp Hill, a new military convalescent hospital built to receive injured soldiers coming back from Europe. There were also specialized medical centers for tuberculosis and venereal disease and a military reception centre on the harbor for incoming wounded soldiers.

Over the next four hours, Camp Hill received between 1,400 and 1,800 critically injured persons. Because it was a convalescent hospital, there was no operating room. At the Victoria General, there were patients on tables, on the floors, under beds, even on the steps outside. Scores had serious eye injuries and there was no eye surgeon. [When one arrived four days later he found an entire hospital ward filled with persons who needed one or both eyes removed.]

In addition, the injured poured into physicians' offices – since it was common in those days for a physician to work from his home. Those physicians usually provided staff for the hospitals. With them the hospitals would have still been overwhelmed. Without them, they were terribly short-staffed.

Halifax is a worst-case scenario and it raises questions about the current approach to planning for mass casualty incidents.

Most plans, for example, assume that an emergency will take place at a specific site, that site will be controlled by emergency agencies, that casualties will be evaluated on site and dispatched to hospitals – after being evaluated – in a rational way. The plans also assume that the

hospitals will be kept informed about what is happening and about how many and what sort of patients are heading their way – and that they will be able to control the number of casualties they receive.

None of those things were true in Halifax. There was no site and, therefore, no site control. And there was no triage. Most of the victims either walked or were driven by strangers to the nearest hospital. A few even came along the waterfront in small boats, by-passing the major part of the fire.

The Halifax explosion occurred nearly 90 years ago but the same pattern emerged on a smaller scale in Edmonton, Alberta, on July 31, 1987, when a tornado swept up the East side of the city and through neighboring Strathcona County leaving damage and destruction, injury and death in its path.

This time there were only 400 injuries but once again there was no specific site and, therefore, no site control.

And, once again, just as in Halifax, other survivors brought many injured to medical centers and it was those survivors who chose which hospital to go to. In Edmonton, that meant that almost all victims went to the two

(Continued on next page)



(Focus On Public Safety continued)

trauma centers – Royal Alexandra and University of Alberta Hospitals – and that the General, Charles Camshell and Misericordia were left with virtually no one to treat. It also meant that the hospitals had no idea who was coming their way, when they would arrive, or what condition they would be in.

Edmonton's emergency plans – which assumed site control and on site triage – were irrelevant in the early stages of response.



The United States has had some mass casualty incidents fairly recently including the bombing in Oklahoma City and the terrorist attack on the World Trade Center. None have generated the kind of problems that faced Halifax in 1917 or even Edmonton in 1987. Oklahoma City resulted in about 400 casualties, roughly the same as Edmonton, but unlike Edmonton, they were all in one location. New York's casualty toll has been estimated as high as 8,000, roughly equal to Halifax, but a small number when the size of New York City is compared to Halifax's 60,000 residents. Even the Loma Prieta earthquake -- 63 killed, about 3,700 injured -- did not overstrain the medical system in the San Francisco area. The one hospital that was

somewhat damaged continued to receive and treat casualties.

And they have not created a more serious scenario – casualties contaminated as well as injured.

There have been only a few major incidents involving contaminated casualties in Western communities – one in Bari, Italy, during World War II, two in Japan -- one in Matsumoto, one in Tokyo -- both the result of terrorist attacks.

They all showed the same pattern.

Good Samaritans rescued the injured and contaminated victims and took them to hospital. En route, those Good Samaritans also became contaminated.

The hospitals were both overwhelmed and unaware of what they were dealing with. As a result, medical staff also became victims. In Tokyo, 13 of the 15 emergency physicians on duty at the nearest hospital were forced to seek treatment when their patients contaminated them.

All this suggests it is time for emergency plans to be reviewed in the light of reality – and that new plans

take into account what will actually happen instead of what emergency planners would like to happen. And it suggests it is time to think about what really happens when patients are contaminated. The concept of site control and on site decontamination sounds wonderful but it has never happened in a major incident.

The key to effective planning starts with accurate assumptions:

1. That in a mass casualty incident all the initial search and rescue and transport to hospital will be done by uninjured and injured survivors;
2. That the hospitals will have no idea who is coming, where they are coming from or what condition they are in – and no control over how many victims they will receive.
3. That most of the initial arrivals will be those who could be fairly easily rescued, in short they will be the least injured, the walking wounded.
4. That the bulk of the casualties will go to one or two hospitals, usually the closest and, perhaps, trauma centers.
5. That the first time a hospital will know that some casualties are contaminated is when it discovers there are contaminated casualties in emergency and that some of its staff has already been contaminated.

This sounds as if planning is pointless. Not so. Once these assumptions are understood and accepted it is possible to plan and plan effectively.

What is required?

First, since most initial arrivals will not be seriously injured, the hospitals receiving them should move them as quickly as possible to designated minor treatment centers away from

(Continued on next page)

(Focus On Public Safety continued)

emergency, perhaps the cafeteria. That will keep emergency clear for later, more serious problems. Emergency physicians and other emergency staff should remain in emergency, leaving the treatment of minor injuries to others.

Second, since hospitals can't easily – given current U.S. law – turn away patients from their doors, they should consider – once the initial flow of casualties starts arriving – setting up triage or screening points away from the hospital between the hospital and the impact areas. Those screening points could direct casualties not in need of urgent treatment to hospitals further away. Urgent cases could proceed.*

***[This suggestion came from Dr. Erik Auf der Heide, an emergency physician, now on the staff of the Agency for Toxic Substances and Disease Registry, a CDC agency in Atlanta.]**



Third, hospitals should arrange – as soon as the extent of an incident becomes apparent – to have some firefighters and/or paramedics respond to hospital emergency so they can assist with unloading injured from civilian vehicles. Those personnel, unlike hospital staff, are used to extricating persons from vehicles without adding to their injuries.

Fourth, if communications systems are working, the hospitals should continually advise the ambulance service(s) about their current situation. Ambulance dispatch can try to even the load by transporting their injured passengers to hospitals not hit by the initial flood of injured – unless it is crucial they get to the nearest trauma centre. [This will not work if hospital-ambulance communications depends on the telephone: the telephone system will be overloaded.]

This, of course, may not be easy. In Edmonton, firefighters, police and ambulance crews did make an attempt to even out the patient load but were frustrated by the fact that transportation was difficult (there was widespread flooding and many roads were blocked by debris) and by the continuing severe weather. When a helicopter tried to take victims to the Misericordia hospital, bad weather forced it to divert to the already crowded Royal Alexandra.

What if the first arrivals are contaminated?

This also calls for high-speed communications.

The first hospital to identify the fact that it has received contaminated patients should immediately alert all other hospitals in the area. Those hospitals may then have time to screen incoming patients and either

decontaminate them outside the hospital or re-direct them to the hospital that is already contaminated.

Equally important, the initial impacted hospital must start a general alert. It is more than likely scores if not hundreds of Good Samaritans have picked up contaminated victims and are bringing them to hospitals. [There were approximately 5,000 persons contaminated by the Sarin gas incident in Tokyo.] Those drivers will not only become victims themselves, they are also likely to become disoriented. They need to be warned before they cause accidents. This is also true for all responding emergency personnel, including police, firefighters and ambulance staff. In Tokyo, those responders entered the contaminated subway stations wearing only hard hats and steel-toed boots. Many of them became victims. Of the 1,364 firefighting personnel dispatched in Tokyo, 135 – 10 percent – became affected by direct or indirect exposure. In addition, 135 (9.9 per cent) of Emergency Medical Technicians (EMTs) showed acute symptoms and had to be treated.

While none of these things are difficult, they require a revised approach to planning and they require a first class system of communications among hospitals and between the hospitals and other emergency agencies as well as the media. [The only way civilian drivers are likely to be reached is through their car radios.] That means an approach to planning which puts the hospitals in the lead. Normally emergency planners see hospitals playing a secondary role, rather than as first responders.

Perhaps the most crucial thing hospitals need to do is adjust their thinking to the reality of major mass casualty incidents. There seems to be a belief that hospitals can decide how many injured they will receive and that they can direct the ambulance service to take patients to other hospitals. As both Halifax and Edmonton show, this

(Continued on next page)

(Focus On Public Safety continued)

is not possible; the victims are not coming by ambulance so the ambulance service cannot direct them. More important the numbers are so great that it will not be possible to satisfy any hospital's preferences.

Does that mean some victims may go without proper medical care?

Yes it does. In Halifax a physician did not see some patients for many hours. Some even got discouraged and left. Others waited two or three days for surgery. That is the real world of mass casualty medicine and it needs to be understood. Only then can realistic plans be developed.

Of course, in a really destructive incident, there are other problems and other possible solutions.

First, it is not unlikely in a truly destructive incident that some hospitals will be damaged. That was true of all the hospitals in Halifax and most, despite smashed windows and broken doors, simply carried on. There were too many injured to do otherwise. [The reception centre in the harbor could not carry on: it was destroyed and the staff on duty was killed.] But it was also true in Edmonton. While the two major trauma centers were all right, Misericordia was forced to go to back-up power and Charles Camzell was partially flooded. At one point it advised the city's Emergency Operation Centre (EOC) that it might have to be evacuated. Emergency plans must include the possibility that hospitals will go out of service during a major mass casualty incident.

Second, it may well be that hospitals not normally part of the emergency response system will receive casualties. In Edmonton, the nearest hospital to a devastated trailer park was Alberta Hospital Edmonton, a forensic psychiatric hospital. Refugees from the trailer park, including some seriously injured, poured into that hospital. Psychiatrists and psychiatric nurses found themselves



forced to use long-dormant medical skills to treat those patients.

Third, in a widespread destructive incident no one knows who has gone where. When emergency personnel do get involved in search and rescue they are often searching for person who have long since left the impact area -- among them the Good Samaritans who have driven victims to hospital. As soon as a hospital becomes aware that a major incident has taken place, it should assign clerical staff or volunteers to record not only the names of the injured but also the names of those who bring the injured to hospital -- and not just the driver but also everyone in the vehicle. By doing that and by passing those names on to emergency responders, the hospitals can help reduce the problems of search and rescue.

Fourth, instead of waiting for the victims to come to hospital it may be possible to take some medical care to the victims. That's what is done in major crowd events such as a rock concert or papal visit or something like the Indianapolis 500. There is no reason why casualty-clearing centers cannot be pre-designated and pre-supplied then quickly staffed in an emergency situation. Dr. E.L. Quarantelli of the Disaster Research Center, University of Delaware, recommended this approach in his 1982 book, *Delivery of Emergency Medical Services in Disasters*. This may even make sense in the days after a major incident. After the 1917

explosion, Halifax established dressing stations in a semi-circle around the worst hit area of the city. Injured survivors could walk to those centers for treatment, reducing the strain on the overcrowded hospitals.

Fifth, emergency planners need to consider what will happen if outside medical personnel rush to their community and to their hospitals to assist. How will they be fitted into the system? In Halifax in 1917, physicians and nurses came within hours from all nearby communities and within days from neighboring U.S. states such as Maine and Massachusetts. The medical committee arranged to meet these new arrivals, billet them and assign them to specific hospital duties. It also arranged to refurbish some buildings as hospitals and staff them with outside volunteers.

Sixth, hospitals need to review their internal plans to see if other elements are inappropriate. Many hospitals plan to receive disaster victims through an entrance other than the normal emergency entrance. This makes little sense if the injured start arriving in private vehicles: civilian drivers won't know that plan. [After an air crash in Barrie, Ontario, civilian drivers dropped some victims off at emergency and left: they were discovered only when a nurse went to emergency to pick up supplies. She and others had been waiting at the main door, the designated arrival point when an emergency is declared.]

(Continued on next page)

(Focus On Public Safety continued)

Similarly plans to discharge patients are of little value when a community has been devastated. In Halifax, for example, if patients had been discharged there would have been no place for them to go.

The current approach to emergency planning does usually work for site-specific incidents such as building collapses, train wrecks, air crashes at airports and major automobile accidents. The current approach does not work when there is a widespread destructive incident and when there are contaminated as well as injured casualties. Since it is known what happens in such incidents and what can be done about that it is time to develop plans that reflect that.

Perhaps the saddest thing that happened in 1917 is that the Chief Medical Officer of the Canadian Army Medical Corps, Lt-Col. McKelvey Bell, recommended almost exactly the approach described in this article when he reviewed the medical response in Halifax. His report was never made public but left to gather dust in a box in the National Archives of Canada.

About The Author

[Joseph Scanlon is Professor Emeritus and Director of the Emergency Communications Research Unit at Carleton University in Ottawa, Canada. He has been studying emergency incidents since 1970. In 1987-88, he was Visiting Professor at the Disaster Research Center, University of Delaware. In 2002, he received the Charles Fritz award for a lifetime contribution to Sociology of Disaster. In 2003-04, he spent 10 months as a fellow with the Agency for Toxic Substances and Disease Registry (ATSDR), studying the problems of dealing with chemically contaminated patients. In recent years, he has lectured in Australia, Austria, France, Germany, Greece, Hungary, Israel, Japan, the Netherlands, Sweden and the United Kingdom as well as Canada and the United States.]



Food and Water Storage Suggestions for Apartment Dwellers ***By Alexis (College Student)***

When I lived at home, we always had extra food and water stored away for emergency situations. Now that I am in college and have two roommates and very limited space, we have been forced to incorporate a bit of creativity into our technique and strategy.

For example, I discovered that cases of canned stew and chili (in the 18 oz. size) are just about perfect for slipping under the bed, while the 15 oz. size of canned fruit also stores well there.



These cases are less than five inches tall, and can be purchased at Costco or Sam's Club for a very reasonable price. The best thing about these types of foods, other than their ability to store easily and compactly, is the fact that they are "ready to eat", right out of the can, if needed. Another very nice feature, and a definite plus, is the fact that they can be moved very easily, if we needed to leave quickly for any reason.

We have also found out that sacks of rice and beans fit very well under our sofa. We do keep these items in Mylar bags, however, to help keep them clean and fresh.

Another essential element of practical preparedness is an ample supply of clean, fresh water for drinking and sanitation. Our solution to water storage in a very limited space is to save all of our liter-size pop bottles and fill them with water. I store mine in the floor of my closet where it is dark. However, do not forget that they need to be re-filled every couple of months in order to ensure freshness.

One final, yet very important step that I take is to keep a 72-hour emergency kit in the trunk of my car. This way, I have access to it virtually wherever I am. I would recommend that everyone put together a 72-hour emergency kit that is customized to his or her specific individual needs.



Broadband Over Power Line (BPL): Why Amateur Radio is Concerned About Its Deployment

Radio amateurs are not opposed to broadband services. On the contrary, they tend to be early adopters of new technology. However, there are ways to deliver broadband that do not pollute the radio spectrum as Broadband over Power Line (BPL) does. These include fiber-to-the-home, cable, DSL, and wireless broadband.

The ARRL--The National Association for Amateur Radio-- is supportive of broadband access for all Americans; however, it opposes BPL as a way to achieve this goal because of its high potential for causing interference to radio communication.

What is Broadband Over Power Line?

BPL is the delivery of broadband Internet signals using electrical wiring to conduct high-speed digital signals to homes and businesses. BPL systems are designed to deliver Internet services using medium voltage power lines as the distribution medium and generally use the frequency range between 1.7 and 80 megahertz (MHz).

The Concern - Broadband + Power Lines = Interference

Because power lines are not designed to prevent radiation of RF energy, BPL represents a significant potential interference source for all radio services using this frequency range, including the Amateur Radio Service. Overhead electrical power lines and residential wiring act as antennas that unintentionally radiate the broadband signals as radio

signals throughout entire neighborhoods and along roadsides. Interference has been observed nearly one mile from the nearest BPL source.

What is the Status of BPL?

From a regulatory standpoint, BPL is an unlicensed, unintentional emitter of RF energy and is subject to FCC Part 15 rules. FCC rules require that BPL systems may only operate subject to the express condition that harmful interference is not caused to licensed radio services. BPL is not entitled to protection from interference. So far, BPL has been deployed in numerous temporary test sites but in few commercial installations. Despite the very limited deployment, considerable interference has been documented.



In October 2004 the Federal Communications Commission (FCC) adopted new rules for BPL systems. These rules place new restrictions on BPL systems in recognition of the fact that they pose a greater threat of radio interference than most Part 15 devices, such as garage door openers. However, the new rules are not sufficient to reduce the probability of harmful interference to reasonable levels. Administrative appeals of the rules have been filed and court challenges are likely.

Why are the Regulations Inadequate?

The Communications Act of 1934 and the FCC Rules have long required that unlicensed emitters such as BPL systems must protect licensed radio services from interference, and that

they must accept any interference to their operation that is the result of normal activity by licensed radio services. However, in practice it is often difficult to resolve such interference problems in the field. In one case in Cedar Rapids, Iowa, BPL engineers spent 12 weeks trying to solve an interference problem without success. The interference did not cease until the test was terminated prematurely.

Studies by the National Telecommunications and Information Administration (NTIA) show that the probability of interference from a BPL system operating at the FCC radiated emission limit on the same frequency as a typical two-way radio station is essentially 100% 200 to 400 meters from the power line, depending on

the frequency. Despite this clear evidence that the limit is too permissive, the FCC declined to impose a tighter limit except in frequency bands used by aeronautical services. This means that unless they voluntarily design their systems for reduced emissions, BPL system operators will have to take expensive, customized steps to correct interference on a case-by-case basis. That may not be possible unless they turn off their systems. Of course, they will strongly resist having to do so. This is why radio operators are so concerned, and why BPL customers cannot be assured of receiving reliable broadband service.

Has the Interference Potential Been Proven?

(Continued on next page)

(Radio Active continued)

The ARRL laboratory has made observations of BPL radiation at a number of trial areas. The lab's findings of interference and related information, including video and audio recordings of actual interference, are available on the Internet at www.arrl.org/bpl. These and other observations of radio-frequency interference at BPL test sites in the U.S. are a matter of public record in FCC files.

An April 27, 2004 report released by the NTIA acknowledges that BPL signals "unintentionally radiate" from power lines. The NTIA also said then-current FCC Part 15 measurement techniques may "significantly underestimate" peak BPL field strength and that "interference risks are high under existing FCC Part 15 rules." The FCC rulemaking only partially addressed these concerns. Although BPL proponents dispute these claims of interference to licensed services, they have provided little in the way of calculations or measurements of BPL radiation levels -- and what they have provided has been flawed by technical errors.

Others at Risk:

- The "short waves" -- the only part of the radio spectrum that supports long-distance, intercontinental radio communication. The short waves are used for international broadcasting, aeronautical, maritime, disaster relief, and other services including the military.
- The "low-band VHF" frequency range that is heavily used by volunteer fire departments, police, and other first responders.
- Depending on their distance from a BPL system, some public safety and federal government radio systems could receive harmful interference.

[Source: ARRL, the National Association for Amateur Radio, 225 Main Street, Newington, CT, 06111-1494 (www.arrl.org)]



NUCLEAR WEAPONS EFFECTS

#2 - Atoms & Radiation

By Joshua

Radiation:

We must first have some understanding of an atom before we can understand radiation. A very simple visual picture of an atom is to think of a tiny solar system with a sun forming the nucleus and the planets acting as electrons. The nucleus has a positive charge and the electrons have a negative charge. The nucleus and the electrons attract one another like two ends of a magnet.

The nucleus of the atom has two main parts, the protons and the neutrons. They are about the same size, but the protons have a positive charge and the neutrons do not have a charge. They cling together to form the nucleus. They are each about 2000 times larger than an electron.

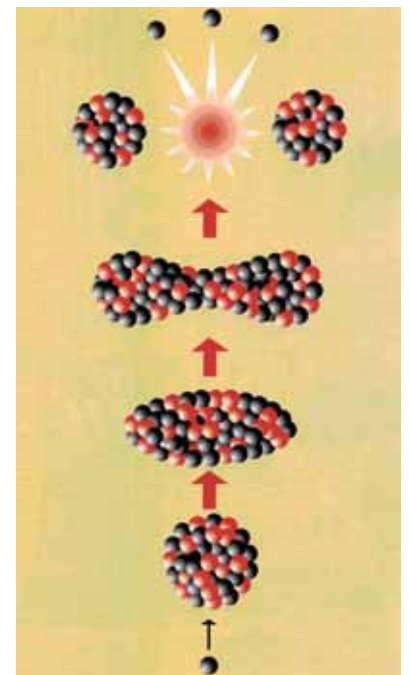
Fission:

I like to think of the nucleus of the atom as the balls of a pool game. The red balls are like protons and the black balls are like neutrons. When they are gathered together in the center of the pool table, they form a large nucleus. When we hit a ball with a cue stick into the center of the other balls, they break apart and go many directions. They keep hitting into each other and the sides of the table until all their energy is spent. This energy is like radioactivity. Radiation, like the moving pool balls is caused when the nucleus of a large atom is split apart into many smaller

atoms. These smaller atoms are radioactive until all their energy is spent. A nuclear bomb is designed to use very energetic neutrons as 'pool balls' to break apart the nucleus. This process has been named 'fission'.

Some atoms are naturally radioactive. At other times, atoms become radioactive through the fission process in a nuclear bomb or in a reactor.

Some atoms are very small and some atoms are very large. Large atoms like uranium have many protons and neutrons. Fission bombs use uranium and plutonium as fuel. Uranium and Plutonium are very large atoms. The fission process breaks these atoms into many pieces that are radioactive. If the bomb explodes at ground level, the radioactive fission parts mix with the dirt and debris from the ground. All of this becomes radioactive and is pulled up into the fireball, which quickly rises above the clouds. When the fireball cools, the radioactive pieces fall back down to the earth. The larger pieces fall first. The smaller pieces fall later. This is called fallout.





FEMA Tests Digital Alert System: Technology Will Send Messages to Wireless Devices, Radio, TV and the Internet

By Dibya Sarkar

In an attempt to expand the nation's alert and warning system, Federal Emergency Management Agency officials are testing digital technology that can transmit text, voice and video messages simultaneously to wireless devices, radios, televisions and the Internet.

In early February, government officials successfully transmitted a text message to participating cellular, TV, Internet and radio providers who volunteered to participate in the test. In March, FEMA officials broadcast a bottomless audio message — a voice message of unlimited length — in the same manner. This month, they plan to test video streaming.

FEMA, which is part of the Homeland Security Department, is partnering with several agencies on the initiative, called the Digital Emergency Alert System pilot, part of the Integrated Public Alert and Warning initiative. The pilot, which is being conducted in the Washington, D.C., metropolitan area, is testing IP data casting technology.

"What we want to do is almost a crawl, walk, run approach to this," said Reynold Hoover, director of FEMA's Office of National Security Coordination, referring to the series of tests. In each case, he said,

FEMA officials are asking participants to provide feedback on how well they received the message, whether it was in the right format and whether they were able to re-transmit the message to their customers.

The one-year test project could determine how the President transmits future messages nationwide during a widespread emergency. But state and local emergency officials could use the digital technology on a daily basis to target encrypted, nearly instantaneous messages at authorized individuals in certain regions during emergencies.

During the tests, FEMA officials sent a digitally encoded alert and warning message to a public TV station, WETA, in Northern Virginia. In turn, WETA officials sent the message from their digital transmitter to participating companies, which were equipped with antennae and receivers hooked up to computers with commercial software. The messages were sent using the Common Alerting Protocol, an open standard for exchanging hazard warnings and reports.

With the software, the recipients — whether a TV station, cellular phone company, radio station or Internet service provider — were able to strip from the message what they could use for their particular medium and retransmit it to their customers.

During the text-message pilot in February, T-Mobile officials took the test a step further. They devised a way to automatically take the message, which contained fewer than 160 characters, and move it into their Short Message Service capability, retransmitting the message to selected handsets. T-Mobile was the only participating cellular carrier to do so.

"My handset was one of them," said Gary Jones, T-Mobile's director of standards policy. "I was actually in a meeting in Geneva, so it works anywhere in the world."

Jones said T-Mobile's messaging capability is designed to be a point-to-point messaging system, meaning it can send a single message to a single handset. It was never meant to be a broadcast service, such as radio or television. He said industry leaders are considering the best ways to meet the government's needs during an emergency.

"Part of the test is to explore what type of technology [can be employed and] how can we send lots of messages to lots of handsets," he said. "That exploration is ongoing."

By law, the national Emergency Alert System (EAS) reaches 95 percent of the population mainly through TV and radio broadcasts, Hoover said. But not everyone has a television or radio or is constantly watching or listening to them.

"By transitioning to this data casting technology, you'll get that message if you've got a cell phone or a pager or a [Research in Motion] BlackBerry, or you're sitting on your computer or on your home telephone for that matter," Hoover said. "We think that the capability and reach will not be 100 percent but certainly approaching that."

Mark Erstling, chief operating officer at the Association of Public Television Stations, which is working with FEMA on the tests, said the Public Broadcasting System also transmits the messages via its satellite interconnection system. Stations in the region and others receive those messages, test them to ensure they are intact and then redistribute them, he said.

Representatives from the nonprofit association, which has more than 300 member stations, approached Hoover about using data casting technology about a year ago, Erstling said. They reached an agreement by the end of last summer and announced the project in October 2004. Various

(Continued on next page)

(News Stand continued)

manufacturers loaned the equipment for the tests. Officials said the receivers cost about \$300 each.

A majority of public TV stations are broadcasting digitally, and data casting is an easy transition to make, Erstling said. Several, such as Kentucky's public TV system, discovered that sending messages to public safety agencies using digital technology takes only a few seconds. The old technology took at least seven minutes, he added.

"We can do that in the variety of capabilities in the digital world, and you don't have to worry about it getting jammed up," Erstling said.

Several states, such as Pennsylvania and Florida, have built statewide emergency alert systems.

Officials said they're unsure how much it will cost to implement the technology nationwide, but using open architecture, nonproprietary technology and commercial software reduces costs significantly. They will deploy the distribution infrastructure nationwide once the tests have been completed and assessed and money is available.

Hoover said federal government officials allotted a total of \$22 million in fiscal 2004 and 2005 for all alert and warning projects, including taking the digital capability nationwide and upgrading the EAS satellite and the National Oceanic and Atmospheric Administration's all-hazards radio network, among other projects.

"We haven't really addressed what would be the private-sector cost as we do this," he said. "I'd be hesitant to say what that might be. I would suggest that it's probably minimal."

[Source: www.fcw.com/article88522-04-11-05-Print]

Operation Ranger: Special News Release for The Journal of Civil Defense

In an ongoing program to assist America's first responders, U.S. Smokeless Tobacco Company (USSTC) has awarded more than 150 off-road utility vehicles on a competitive basis to firefighting, rescue, police, emergency medical service, emergency management and wildlife law enforcement organizations in 49 states.



The Polaris Ranger 6x6 utility vehicle is the most capable vehicle in its class, in the view of the USSTC Operation Ranger committee. The vehicle offers improved horsepower and speed, shaft-drive, true six-wheel drive, large payload carrying capability, rugged suspension and high ground clearance. The Ranger also can seat three, an advantage in many emergency situations.

Vehicle awards have been made on an emergency basis to aid in wildfire

"Operation Ranger," as the program is now known, has replaced the Company's highly successful two-year-old National Trail Gator Donation Program that began in late 2002. The current program awards versatile Polaris Ranger 6x6 utility vehicles. Previously, the company provided John Deere supplied 4x6 and 4x4 vehicles.

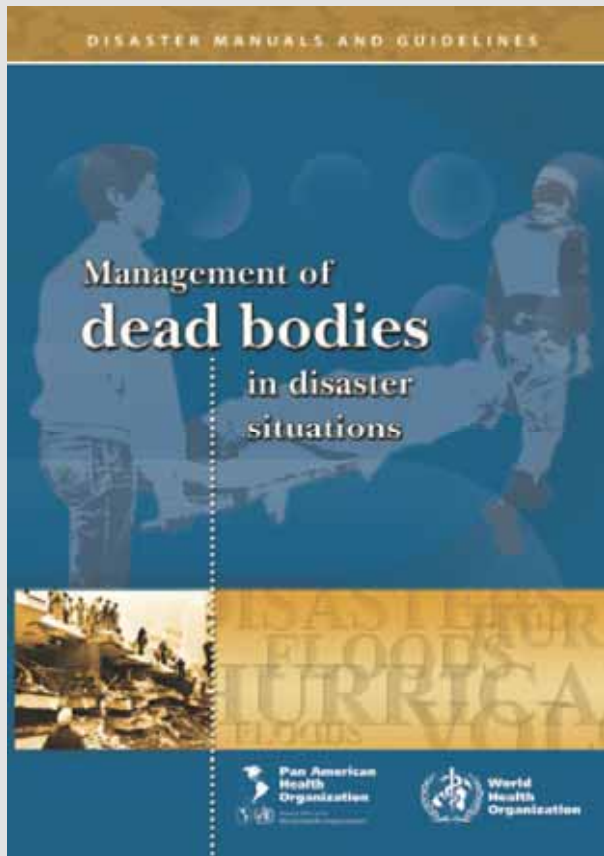
Larger than ATVs, these vehicles can be used in a wide variety of applications from off-road rescue and brushfire suppression to transportation of HAZMAT, bomb squad and search dog teams. Several emergency management agencies have been awarded vehicles, which are useful in almost any setting imaginable.

fighting in Arizona and California, as well as for debris recovery from the Space Shuttle Columbia tragedy in Texas.

The company plans to award approximately 70 Polaris Rangers throughout 2005 from the 1,300 applications already received, a 30 percent increase over 2004.

Award applications for 2006 Polaris Rangers are expected to open this fall and will be available online at www.us smokelesstobacco.com under the "Corporate Giving" button.

More information on the vehicles themselves can be found at www.polarisindustries.com.



To purchase, please visit our online bookstore located at www.tacda.org/store.

TACDA

BOOK REVIEW

Management of Dead Bodies in Disaster Situations

*Published by the Pan American Health Organization
A Division of the World Health Organization (WHO)*

Reviewed by William Perkins, TACDA Board of Directors

“Management of Dead Bodies in Disaster Situations” serves as a true disaster manual and gives guidelines for dealing with disasters in which there are a large number of fatalities.

This informative and well-written publication provides instructions for dealing with several different types of disasters, as well as examples of previous events and the mistakes that were made, and lessons learned from those mistakes.

The manual effectively deals with the following important subject areas. (Partial list):

- ❖ Preparedness for mass fatalities
- ❖ Coordinating between various institutions
- ❖ Training programs and simulation exercises
- ❖ Transportation and communications
- ❖ Identification of bodies
- ❖ Importance of the controlling organization remaining cognizant of the religious and cultural beliefs as well as myths and superstitions that may exist in the area
- ❖ Psychological aspects of dealing with the survivors

Conclusion:

“Management of Dead Bodies in Disaster Situations” serves as an excellent guideline for any organization or state that may have to deal with mass fatalities after a major disaster.

SUBMIT NOW TO THE TACDA JOURNAL OF CIVIL DEFENSE™

The Journal of Civil Defense™ is published bi-monthly by The American Civil Defense Association (TACDA™) as a main vehicle for the distribution of a wide spectrum of current and reliable civil defense, disaster preparedness and mitigation issues, on both the personal and the professional level, to our members and subscribers.

EMAIL JCD@TACDA.ORG FOR MORE INFORMATION

Because Survival is the Highest Priority™

Don't wait until
it's too dark
to see the light...



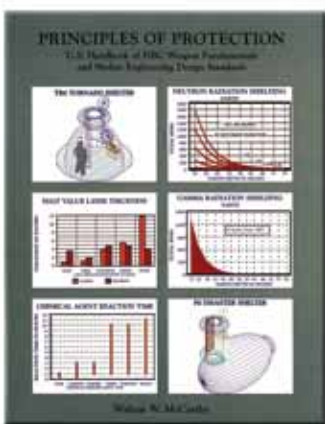
Utah Shelter Systems
(801) 453-8000

info@UtahShelterSystems.com

www.UtahShelterSystems.com

ALL RADIATION DETECTION DEVICES ARE NOT CREATED EQUAL

Berkeley Nucleonics Corporation's (BNC) nukeALERT 951 is a radiological detection pager designed to meet the critical needs of the front line responder. For emergency personnel involved in commercial vehicle inspection, perimeter security or tactical surveillance, the nukeALERT 951 provides unsurpassed detection capabilities in a micro-sized package. The unit is simple to operate, waterproof, rugged enough to withstand a five-foot drop on concrete, and does not require annual calibration or maintenance.



Principles Of Protection (P.O.P.)

U.S. Handbook of NBC Weapon Fundamentals and Shelter Engineering Design Standards

Principles of Protection (P.O.P.) is known throughout the United States as the most comprehensive technical work ever compiled on shelter engineering. If you are planning to build a shelter to protect yourself, your family and friends and/or your community, and are looking for one of the most comprehensive sources of essential information available today, then Walton McCarthy's P.O.P. is the book for you. With more than 400 pages of charts, diagrams, specifications and statistical data, you would have a very difficult time locating a more complete and detailed reference resource.

The TACDA™ STORE www.TACDA.org/STORE



TACDA™ encourages you to take a few minutes to **STOP** and become a new member at www.TACDA.org

Board of Directors

Sharon B. Packer
(President)

Bronius Cikotas
(Vice-President)

George N. Levitt
(Executive Director)

Kathy Eiland

Frank L. Williams

Dr. Gerald L. Looney

Dr. Arthur B. Robinson

William Perkins

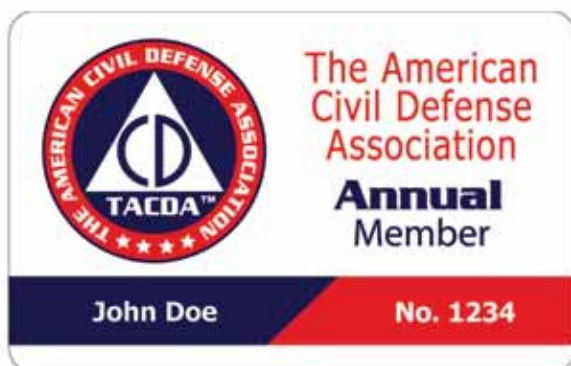
For only \$36 per year, as a **TACDA™** Annual Member you will receive:

- * A personalized membership card and welcome kit.
- * A one-year subscription to The Journal of Civil Defense.
- * Member discounts on all products and supplies offered through the TACDA Store.
- * A complimentary enrollment into the TACDA Academy.
- * Access to online resources located in the Members Only section of the TACDA web site.
- * Most importantly, Peace of Mind.

TACDA™ also offers non-member Journal subscriptions for groups such as libraries, schools etc.

ONLY \$30
1 Year / 6 Issues

Email jcd@tacda.org to order today.



TACDA™ REMINDS YOU TO

TACDA™ teaches and promotes reasonable protective measures and relief activities to be conducted by American civilians, in the event of natural or manmade disasters, in conjunction with and in addition to federal, state and local mitigation and relief efforts. Please call TACDA at 1-800-425-5397 or visit www.tacda.org for more information.



STOP
STUDY
THINK
OBERVE
PREPARE

TACDA™
11576 S. State St.
Suite 502
Draper, UT 84020

www.TACDA.org
info@TACDA.org
(800) 425-5397
(800) 403-1369 (Fax)

ISSN# 0740-5537