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## **FEATURED ARTICLE**

## Facts About Radiation Exposure Levels in Nuclear Emergencies by Sharon B. Packer & JCD Editors

With many countries possessing nuclear weapons capabilities, and with many more pursuing and developing nuclear weapons programs, the world in which we live is becoming more and more unstable with every day that passes. No longer is it just the "super powers" of the world that possess nuclear capabilities, but now, as knowledge is increasing and materials are so easily obtained, many rogue and hostile nations are coming aboard the "nuclear weapons train". This fact generates concern among many American citizens, and rightfully so. In the past, the possibility of nuclear war has been portrayed as some far-fetched fantasy entertained by science-fiction buffs and those said to be "a little paranoid". However, this is not the case today--nor should it have ever been. The threat of nuclear war has been a valid concern for many years, at least to those that took the threat seriously. Now, however, this threat has increased tremendously and more and more people are realizing that it is not just a fantasy world but a real threat that poses real dangers and consequences.

The focus of this article is to shed some light on ways to protect ourselves and our families from the effects of nuclear war and terrorist activities involving nuclear weapons and warfare. As brought out in the last issue of the Journal of Civil Defense, the most effective weapon that we as American citizens can use to defend ourselves against such threats is knowledge; knowledge of what actions we can take to provide maximum protection. The more we know and the more that we understand the threats and the nature of the weapons likely to be utilized, the better prepared we can be.

One concerned individual contacted me with the following questions: "I live about 30 miles east of a major airport. I do not believe I am in danger of blast, but could you please tell me how much radiation I would expect to receive and what levels are in the safe range? Please, also comment on how much shielding I would need for a 'fallout shelter' and how long we would need to stay sheltered."

My response to this individual was:

"It is difficult to predict radiation levels as they are affected by so many variables. Among these are the weather, the wind, the type of attack, and the types of weapons used. Radiation generally travels with the prevailing winds from the west to the east. We will assume, for the sake of simplicity, that the airport would be targeted with a ground burst of 500 KT."

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"Over a one-week period, you could receive as much as 3,450 Roentgens (R), from this one weapon. These levels could be even higher under certain conditions. As you can see from the following penalty table, this level of radiation far exceeds the lethal dose. You must, therefore, protect your family by sheltering them for the proper length of time with the proper shielding."

"In a full-scale attack, it would be expected that radiation levels in this range would affect about 35% of the landmass of the United States. The average (mean) standard exposure rate would be about 500 R/hr. at one-hour post detonation. Another 35% of our landmass would be expected to exceed these levels and have blast consequences as well."

"The PF (protection factor) is a ratio of the dose rate concentration in an unprotected location compared to the dose rate concentration in a protected location. A shield of approximately 4 inches of soil or sand will increase the PF by a factor of 2. Concrete is heavier and would require only 3 inches to give the same protection. A basement will give an approximate PF of 10. A shield of four inches of sand will increase the PF to 20. Eight inches will increase the PF to 40. Twenty-four inches of dirt or sand overhead and on all sides in a basement should increase the PF to about 640. A good fallout shelter should have a PF of over 500."

"After about 7 hours, the radiation levels should decrease from 500 R to less than 50 R. After two days, the levels should decrease to less than 5 R. After two weeks, the radiation level should be under .5R (500 mR) and at that time, it would be safe for you to come out of your shelter."

As I stated above, the more we know about the situations that we could face as a country and as individual citizens, the better enabled we can become to prepare for and respond to these situations.

Acute Effects	Accumulated Exposure	Accumulated Exposure	Accumulated Exposure
	(R)	(R)	(R)
	1 Week	1 Month	4 Months
Medical Care Not Needed	150	200	300
Some Need Medical Care	250	350	500
Few if Any Deaths			
Most Need Medical Care	450	600	600
50% + may die			
Lethal Dose	600		

## **RADIATION PENALTY TABLE**

The accumulated exposure should not exceed those in the first row. If radiation levels reach 10/R/hr in the sheltered area, the doses in the first row will probably be exceeded. In this eventuality, the shielding in the sheltered area should be increased. In a full scale attack, about 35% of our population would be expected to exceed the above doses. A PF of 500 is recommended for all fall out shelters.

## **EXPOSURE CHART AT 30 MILES DOWNWIND**

(Exposure levels are measured in Roentgens "R" and are based upon a proposed 500 KT surface burst and wind speeds of 15 mph.)

Time	In Open	In Shelter PF 15	In Shelter PF 40
1 Week	3450	230	86
1 Month	4100	273	103
4 Months	4500	300	113

A PF of 40, in this scenario will give the minimum protection not to exceed row one of the Penalty Table above.

## **CIVIL DEFENSE NEWS AND OPINIONS**

#### North Korea's Nuclear Program Threatens Regional & Global Stability By Gerry J. Gilmore, American Forces Press Service

SINGAPORE, May 31, 2003 – There's no greater threat to peace and stability facing Asian and other nations today than North Korea's nuclear program, U.S. Deputy Defense Secretary Paul D. Wolfowitz said here May 31.

In his remarks to attendees at the second annual Asia Security Conference in Singapore, Wolfowitz observed that the spirit of multilateral cooperation embodied by such conferences holds "important promise for enabling countries in the region to resolve problems peacefully." The conference is sponsored by the International Institute for Strategic Studies.

And, he asserted, "nowhere is that challenge greater than in confronting the problem posed by North Korea's nuclear program."

North Korea's behavior over the past year, in both its public declarations and actions, "threatens regional and global stability," Wolfowitz maintained.

For example, in October North Korea declared that it had violated and would continue to violate its promise not to proceed with its uranium-enrichment program, he pointed out.

And earlier this year, Wolfowitz continued, the North Koreans announced that they were reactivating their plutonium production program.

Also, just two weeks ago the North Koreans characterized the 1992 North-South Korean denuclearization agreement they had signed as "a worthless piece of white paper," Wolfowitz noted.

It's evident that North Korea is "a state that has little regard for the commitments it undertakes," Wolfowitz observed, "or for the delicate nature of the northeast Asia security environment."

The deputy secretary also responded to North Korea's desire to deal exclusively with America in

discussing its nuclear program: "This is not and cannot be a bilateral issue, as Pyongyang would like it – limited to a two-way dialogue between North Korea and the United States," he declared.

North Korea's nuclear program "affects the whole region," Wolfowitz observed, noting the issue therefore "requires a multilateral approach."

If North Korea continues with its uraniumenrichment and plutonium-processing programs, Wolfowitz noted, "it could export fissile material – and even entire (nuclear) weapons systems."

Due to its past track record, there's little likelihood that "North Korea would restrain itself from selling nuclear materials and technology to the highest bidder," Wolfowitz pointed out.

In view of this "real and immediate danger," the deputy defense secretary urged that "all responsible countries in the region – indeed in the world – must step up to the challenge."

The only way the North Korean nuclear weapons problem can be solved peacefully, Wolfowitz declared, "is through a carefully managed, multilateral approach to Pyongyang."

If responsible nations band together to confront North Korea's nuclear weapons program, its missile exports and its drug sales, "we at least have a chance" of solving the issue peacefully," Wolfowitz remarked.

North Korea is "heading down a blind alley," regarding its pursuit of nuclear and other weapons, he said. The United States, Japan, South Korea, China and Russia, he emphasized, all strongly oppose nuclear weapons on the Korean Peninsula.

By misspending its treasure in acquiring costly weapons systems and maintaining a vast military it doesn't need, North Korea faces collapse "from the total failure of its system," Wolfowitz observed. The diversion of North Korea's scarce resources to nuclear weapons and other military programs, Wolfowitz pointed out, "only exacerbates the weaknesses of North Korea's underlying system."

The deputy defense secretary noted that North Korea should follow the example set by China 25 years ago.

"China pointed the way for how a failed communist system can undertake a process of reform – without collapsing," Wolfowitz remarked. is to avoid the kind of collapse that is viewed with apprehension throughout the region," he noted.

If North Korea ceases its belligerent ways and stops wasting money on military capabilities "it does not need and cannot afford," Wolfowitz declared, then "it will find the door open to all kinds of fruitful cooperation with the countries of the Asian-Pacific region."

Wolfowitz is on the third day of a trip that will take him next to South Korea and Japan. He was slated to return to Washington June 3.

"That is the course North Korea needs to pursue if it

# FOCUS ON EMERGENCY MANAGEMENT AND PUBLIC SAFETY

#### A Look at Civil Defense Communications in Emergencies – RACES (Radio Amateur Civil Emergency Service)

Founded in 1952, the Radio Amateur Civil Emergency Service (RACES) is a public service provided by a reserve (volunteer) communications group within government agencies in times of extraordinary need. During periods of RACES activation, certified unpaid personnel are called upon to perform many tasks for the government agencies they serve. Although the exact nature of each activation will be different, the common thread is communications.

The Federal Emergency Management Agency (FEMA) provides planning guidance and technical assistance for establishing a RACES organization at the state and local government level. A comprehensive RACES manual, Guidance for Radio Amateur Civil Emergency Service, is available on the FEMA Web site < http://www.fema.gov/library/civilpg.shtm>.

The Federal Communications Commission (FCC) is responsible for the regulation of RACES operations. RACES is administrated by a local, county, or state civil defense agency responsible for disaster services. This civil defense agency is typically an emergency services or emergency management organization, sometimes within another agency such as police or fire. RACES is a function of the agency's Auxiliary Communications Service (ACS),

sometimes known as DCS (Disaster Communications Service), ECS (Emergency Communications Service), ARPSC (Amateur Radio Public Service Corps), etc. Many ACS units identify themselves solely as RACES organizations, even though their communications functions and activities typically go beyond the restrictions of RACES operations. Other ACS units combine government RACES and non-government ARES (Amateur Radio Emergency Service) activities and identify themselves as ARES/RACES organizations. Yet other ACS units who use amateur radio for emergency government communications identify themselves solely as ARES organizations, whether or not they activate under FCC RACES Rules.

The Amateur Radio Regulations, Part 97, Subpart E, §97.407, were created by the FCC to describe RACES operations in detail. Although no longer issued or renewable, RACES station licenses were issued in the past by the FCC to government agencies for RACES operations. The agencies may continue to conduct RACES operations without these licenses, using primary or club call signs.

ACS, in its RACES and other reserve emergency communications functions, provides a pool of emergency communications personnel that can be

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called upon in time of need. ACS/RACES groups across the country prepare themselves for the inevitable day when they will be called upon. When a local, county, or state government agency activates its ACS unit, that unit will use its communications resources (RACES, if necessary) to meet whatever need that agency has.

Traditional RACES operations involve emergency message handling on Amateur Radio Service frequencies. These operations typically involve messages between critical locations such as hospitals, emergency services, emergency shelters, and any other locations where communication is needed. These communications are handled in any mode available, with 2 meters FM being the most prevalent. During time of war, when the President exercises his War Emergency Powers, RACES might become the only communications allowed via amateur radio, using specific amateur frequencies set aside for wartime RACES use. ACS provides greater flexibility than RACES for non-wartime emergencies, on any amateur frequency designated in the local, county, or state ACS (or RACES) plan.

Activating under the FCC's restrictive RACES

Rules is not always necessary when using Amateur Radio Service frequencies for emergency communications. For example, ACS communicators may need to communicate with ARES or other radio amateurs who are not government-certified to operate in a RACES net. ACS personnel also might become involved in non-amateur public-safety or other government communications, Emergency Operations Center (EOC) staffing, and emergency equipment repair.

Whatever need arises, trained ACS personnel are ready and prepared to help, via RACES or other means. ACS/RACES groups develop and maintain their communications ability by training throughout the year with special exercises and public-service events. When that fateful day occurs, ACS/RACES will be there to meet the challenge.

To join ACS or RACES and to be able to participate in RACES and other government emergency communications activities, contact your local, county, or state ACS Officer or RACES Radio Officer or Coordinator.

# LETTER TO MEMBERS

Dear TACDA Member,

This is just a note to let you know that you will be seeing some changes in the services that we currently offer, including improvements in the Journal of Civil Defense. Starting this summer, we will be providing a weekly newsletter in electronic format specifically designed to keep you, our members, informed of current civil defense, homeland security, emergency management and public safety news and developments. We will also be offering an exclusive alert service which will provide you with weekly homeland defense updates and timely special alerts as they occur.

We believe that the coming changes within the organization will truly enhance your membership benefits and better enable you, as a TACDA member, to remain informed in these most uncertain times. We will be sending out a notice to you which outlines in detail all of the new and exciting benefits for TACDA members.

If you have any questions or comments, please feel free to contact TACDA at any time to speak with a representative.

Kindest Regards Kathy Eíland Executive Director, TACDA

# FEATURED PRODUCTS

### Rad Block Potassium Iodide (KI) Tablets

Potassium Iodide (KI) is used in the event of a nuclear/radiological incident where radioactive Iodine, a byproduct of nuclear fallout, is released into the air. This radioactive Iodine can be harmful to the Thyroid gland, and excessive exposure introduces the potential for serious complications, sometimes not showing up until years after exposure.

Potassium Iodide (KI) works to saturate the Thyroid gland with "good" Iodine, thereby prohibiting it from absorbing the radioactive Iodine associated with nuclear fallout.

Right now, you can purchase a case of 12 bottles of Rad Block Potassium Iodide tablets through the TACDA Store for only \$131.40 for TACDA members, and only \$151.40 for nonmembers. Each bottle contains 200 tablets at 65 mg each.

## **Dosimeters & Charging Units**

- *Member Cost* \$89.95
- Nonmember Cost \$99.95
- Free shipping within the 48 contiguous states.

If you were a first responder to a nuclear disaster, such as a terrorist attack on your city, how would you know whether or not there was any radioactive materials present? If you live in a region near a nuclear power plant or in an area that may potentially be the focus of a terrorist attack, how would you know if you needed to evacuate or to take shelter from radioactive contamination? If we are ever so unfortunate as to have a nation, like North Korea, Iran or China detonate a nuclear weapon on our soil, how would you know what radiation threat you faced?

A dosimeter or rate meter is the simplest and most portable means of determining whether you need to seek protection. These tools can also help you manage your risk by showing you, in real time, your level of exposure, and can help you decide how much longer you want to keep working in a warm or hot zone. The dosimeters, offered through the TACDA Store, can be extremely useful to personal, medical, scholastic, airport x-ray, industry, and military applications. These dosimeters are rugged precision instruments about the size of a pocket fountain pen, and are used to measure accumulative doses or quantities of gamma (X-ray) radiation. They are not effected by nearby electronic devices as some other dosimeters are. A metal clip is used to attach the dosimeter to an individual's pocket or to any available object in an area to be monitored for total radiation exposure. They utilize an extremely sensitive fiber electrometer type voltmeter and a small volume of air to measure the total amount of radiation to which the instrument has been exposed. A reading may be made at any time by merely looking at a source of light through the eyepiece end of the instrument. These instruments may be totally immersed in water without affecting their performance, and are ruggedized in order to operate reliably in harsh military environments.

Call (800) 425-5397 now to order, or visit www.tacda.org.