Journal of
Civil Defense

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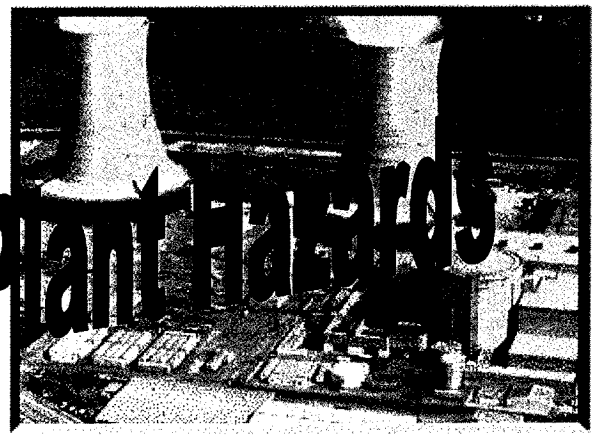

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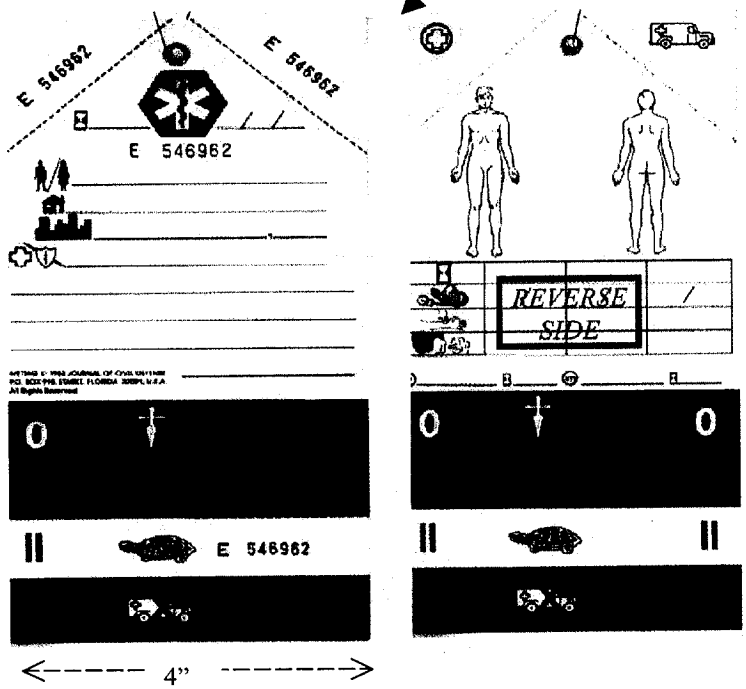

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To our readers ...

This issue of the *Journal of Civil Defense* focuses on the hazards associated with a major nuclear power plant disaster. In particular, this issue shows what steps the government and citizenry should consider taking to protect the U.S. population from radiation hazards and the long-term risks of cancer and thyroid problems, especially for children. And while TACDA believes the probability for a major nuclear power plant accident to be low, we do believe it is possible and may someday occur either through human error, an act of terrorism, or in conjunction with a major natural disaster.

TACDA Newsbyte:

New TACDA President!

For years **Nancy D. Greene** has faithfully and capably served as the Vice President of TACDA. At our last TACDA Board Meeting, she was unanimously voted in as the new TACDA President. The former President, Kevin Briggs, will still serve on the Board of TACDA but has stepped down in order to better focus his efforts on some specialized civil defense related activities.

Thanks for your continuing support!

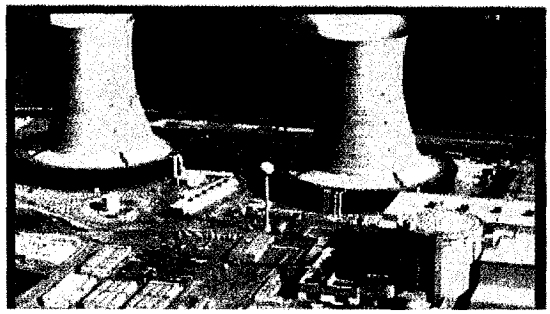
The TACDA Staff

The Journal of Civil Defense *is the official publication of the American Civil Defense Association (TACDA). Nancy D. Greene, President; Kathy Eiland, Executive Director. The TACDA Board also includes Ed York, Sharon Packer, Frank L. Williams, Bron Cikotas, Dr. Gerald Looney, Kevin Briggs, and Regina Bass. Walter Murphey is the Editor Emeritus of the Journal.*

Nuclear Power Plant Hazard Issues

Are you prepared for a nuclear power plant disaster?

by Kevin Briggs



Three Mile Island Nuclear Power Plant

Observations about the Three Mile Island Nuclear Disaster

Did you know that during the Three Mile Island (TMI) nuclear power plant emergency of Wednesday, 28 March through early April of 1979, **government and TMI officials did not know for days the full extent of the risks to the public and that the government went into emergency production of Potassium Iodide (abbreviated "KI") solution to help protect the public**? The following quote from the book "Nuclear War Survival Skills", states:

> "When the Three Mile Island nuclear reactor accident was worsening and it appeared that the reactor's containment structure might rupture and release dangerous amounts of radioactive iodines and other radioactive material into the atmosphere, the Government rushed preparation of small bottles of a saturated solution of potassium iodide. The reactor's containment structure did not rupture. **The 237,013 bottles of saturated KI solution that were delivered to Harrisburg, Pennsylvania – mostly too late to have been effective if the Three Mile Island accident had become an uncontained meltdown – were stored in secret in a warehouse, and were never used.**"

It was not until the third day of the TMI disaster that Pennsylvania's Governor Thornburgh decided to recommend that pregnant women and preschool children leave the region within a 5-mile radius of Three Mile Island and to close all schools within that area.

The official "Report of the President's Commission on The Accident at Three Mile Island" also reported the following about the hazardous evacuation zone planning during this disaster:

> "Friday, Saturday, and Sunday were hectic days in the emergency preparedness offices of the counties close to Three Mile Island. **Officials labored first to prepare 10-mile evacuation plans and then ones covering areas out to 20 miles from the plant.** *{ TACDA comment: State and local governments, with support from the Federal government and utilities, currently develop plans that include a "plume emergency planning zone" with a radius of only 10 miles from each nuclear power plant. However, government officials recognize that in a catastrophic incident, a 20-mile radius akin to what was needed with the Chernobyl disaster may be more appropriate.}* The Pennsylvania Emergency Management Agency recommended Friday morning that 10-mile plans be readied. ... **Late Friday night, PEMA told county officials to develop 20-mile plans. Suddenly, six counties were involved in planning for the evacuation of 650,000 people, 13 hospitals, and a prison.**"

If the TMI containment vessel had ruptured, hundreds of thousands of people could have been exposed to dangerous levels of radioactive iodine within the first three days. Millions of people could have been exposed to dangerous levels of radioactive iodine within a week or two (if TMI had turned into a "nuclear volcano" spewing forth radioactive iodine and other dangerous radioactive materials and gasses, akin to the Chernobyl disaster).

If the Three Mile Island plant (or other nuclear plant) today experienced a catastrophic meltdown and containment vessel rupture, people who live within about a 20 mile region of the plant (who are exposed to the radioactive plume) may be subject to the dangers of acute radiation poisoning (with symptoms appearing relatively rapidly) as well as long-term health effects like thyroid cancer. If people are not evacuated in a timely fashion from this region and are exposed to high levels of radiation, they could experience severe sickness and possible death within a few weeks to months. Those within the 20-mile region who are exposed to radiation and do not have the protection afforded by Potassium Iodide (especially

children) would likely begin to have long-term thyroid problems and possible cancer starting typically around 5 to 15 years after their exposure (as occurred with the Chernobyl disaster). A range of Nuclear Regulatory Commission (NRC) scenarios show that at 20 miles from a moderate to major U.S. nuclear power plant emergency, the population could be exposed to levels of radioactive iodine from 3 to 1,000+ rems mean thyroid dose (which is roughly 3 to 1,000+ times beyond the level of radiation where Potassium Iodide intervention is recommended by the World Health Organization (WHO) for children and those pregnant). Depending on the severity of the accident, people in this region may need to be evacuated and **if they did not take KI pills before ingesting any radioactive iodide, they could face serious and life threatening long-term health problems (like thyroid cancer). Also people in the less radiated portions of this region may be able to stay at home rather than evacuate if they have KI pills to minimize their risk of long-term health problems. Hence, for these people, KI pills could greatly reduce the logistical problems associated with evacuating.**

People who are outside of what is typically called the 10-mile "Inhalation Emergency Planning Zone" (EPZ) may still face very dangerous levels of radiation. The government typically calls the regions beyond the 10-mile EPZ the "Ingestion" EPZ because radioactive materials can also be ingested through eating contaminated food. But in a major disaster, inhalation of very dangerous nuclear materials can also continue to occur out to over 300 miles (reference the NRC's NUREG/CR 1433 and the meeting minutes from the "Public Meeting to Substantially Revise NUREG-1633, "ASSESSMENT OF THE USE OF POTASSIUM IODIDE AS A PUBLIC PROTECTIVE ACTION DURING SEVERE REACTOR ACCIDENTS" - Dec 98). The NRC's NUREG/CR 1433 shows that for children, the following dangers may occur from the inhalation of nuclear materials after a massive core-melt atmospheric accident (like Chernobyl):

Approximate Dangers of a Core-Melt Atmospheric Accident for Children

Distance in Miles	Mean Thyroid Dose (rem) for Exposed Children Outdoors*	Probability of Thyroid Damage to Exposed Children Located Outdoors if not Protected by Stable Iodine (like KI)
1	26,000	100%
5	11,600	100%
10	6,400	100%
25	2,200	80%
50	760	26%
100	200	7%
150	72	2%
200	32	1%

* Note: The World Health Organization recommends stable iodine administration to children and pregnant women at the level of 1 rem accumulated thyroid dose.

Some typical ways that ingestion of dangerous nuclear materials can occur is (1) from eating food (like garden vegetables or fruit) or water, etc., that contains nuclear fallout and (2) by drinking milk from cows or goats -- or for nursing infants, from moms -- who have ingested radioactive materials from their food or water which then passes into the milk they produce. People living in this zone can minimize their risk of dangerous radiation exposure by avoiding milk, vegetables, fruit, etc., that may be carrying radioactive materials and by taking Potassium Iodide pills (if living in an area exposed to dangerous radiation). Unfortunately, adequately tracking where and how radioactive materials have been deposited in near-real-time throughout large regions of the country and within the food supply system may be quite difficult, if not impossible. The trained people, computer models of the weather and food systems, sensors, etc. required to accurately assess the millions of radiation path vectors in a near-real-time fashion do not currently exist (although limited macro-scale predictions can be made, but may prove to fall far short of the needs of thousands to millions of people who are exposed to radiation risks). Hence, relying solely on limiting questionable food or drink intake in areas predicted to be radioactive may be dangerous for both those living in the affected areas and those outside of these areas who unknowingly receive food or drink poisoned by fallout.

Unfortunately, much of the current U.S. policy, as opposed to other countries in Europe (like Poland), assumes that the national, state, and local health officials will adequately warn U.S. citizens of any radiation danger and shipments of any

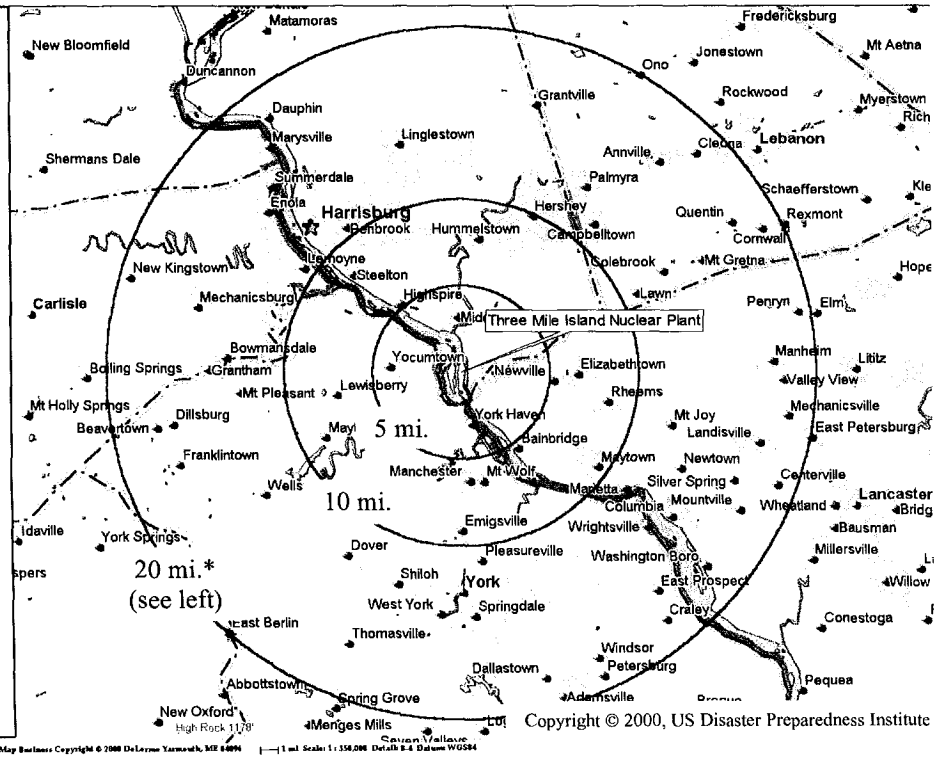
necessary non-radioactive food will be accomplished in a timely and effective manner into contaminated areas. This assumption of adequate warning and alternative food distribution is used to explain the current U.S. policy of not having a stockpile of Potassium Iodide sufficient to administer to people who live in dangerously radiated regions within the zone of between 10 and 320 miles from a nuclear power plant. **What this policy does not explain is how the government plans to handle the major problem of inhalation of radioactive iodine within these areas (see Table above).** Some policy-makers have said that for the extended inhalation hazard zone (which can go up to roughly 320 miles), we would be able to track the radioactive cloud flows in near-real-time and evacuate as necessary. As mentioned above for the food contamination predictions, predicting where radioactive iodine gas is on a near-real-time basis is extremely difficult, if not impossible, with the precision necessary to protect all of the exposed public. **And while many other countries see the benefit of such stockpiling of stable iodine to protect people up to hundreds of miles from a major accident, it is not felt to be cost-effective by many U.S. policy-makers who have read or heard generalized studies (with very questionable assumptions and little public mention of the risks) that do not factor in the costs of things like: (1) human suffering associated with sickness (like cancer and hypothyroidism) and deaths caused by preventable thyroid irradiation, (2) lawsuits against the utilities and the government should thousands to millions of people have their health needlessly damaged, especially after studies have shown that KI could greatly diminish people's risks and have recommended KI's stockpiling/distribution, and (3) having to evacuate much larger portions of the U.S. population around a nuclear power plant than would have been needed if KI pills were available to make in-place sheltering a more viable option in large outlying areas.**

If TMI's containment vessel had burst and an immediate mass evacuation had been required during the first few days of the disaster, tens to hundreds of thousands of people would have had to do so without the protection afforded by Potassium Iodide pills. This is still the case today. If a moderate to major nuclear power plant disaster occurred today at Three Mile Island (or another U.S. nuclear power plant), officials would have to weigh the risks of ordering an immediate evacuation without KI tablet protection where evacuees may face greater risks in their cars of dangerous radiation exposure -- especially with traffic jams -- (as well as the dangers associated with panicked people) than if people stayed in their homes with the windows and doors shut and with their ventilation system turned off . One can only imagine the difficulty of rapidly evacuating 10s to 100s of thousands of people -- and possibly millions of people – within a few hours in a 10 to 20 mile radius, especially if there is little prior warning and if the incident occurs at night or during extreme weather conditions.

The map below shows the 5, 10, and 20-mile evacuation zones around the Three Mile Island Nuclear Power Plant. During the Three Mile Island nuclear materials release, pre-school and pregnant or nursing moms were evacuated within 5 miles

Three Mile Island Nuclear Power Plant Evacuation Zones:

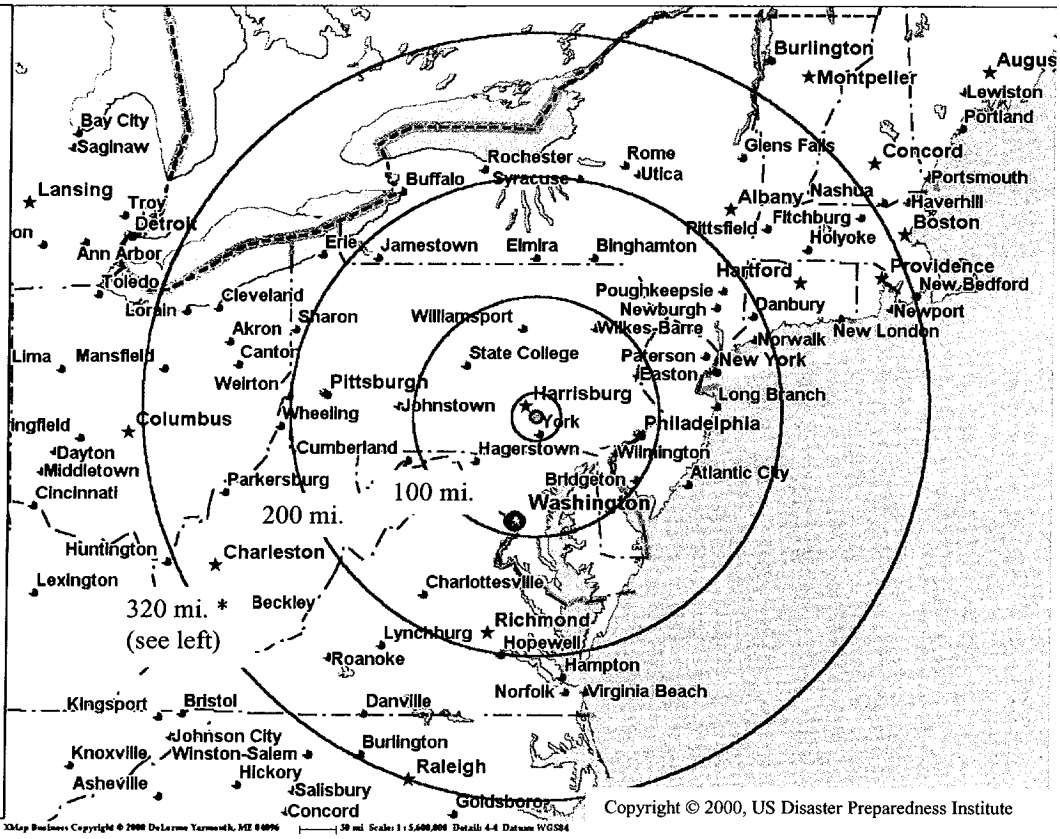
* 20 miles is the expected maximum evacuation zone in a radiation emergency, if the public has Potassium Iodide (KI) or KIO3 pills. If not, then see next map for possible evacuation zones (mainly for people 40 and under and pregnant or nursing moms). During the relatively minor Three Mile Island nuclear materials release, pre-school and pregnant or nursing moms were evacuated within 5 miles of the plant. During the major Chernobyl nuclear plant disaster, people were evacuated (many permanently) from a zone of roughly 20 miles.



of the plant and people were cautioned to stay indoors within a 10-mile radius. During the major Chernobyl nuclear plant disaster, people were evacuated (many permanently) from a zone of roughly 20 miles. 20 miles is the expected maximum evacuation zone in a radiation emergency if the public has Potassium Iodide pills.

The map below shows the maximum expected radioactive iodine hazard regions around the Three Mile Island Nuclear Power Plant, if TMI's containment vessel were ever to catastrophically rupture. 320 miles (the outer ring) is the expected maximum zone of where a high cancer risk could occur in a radiation emergency and where Potassium Iodide (KI) pills may be needed downwind of the plant to reduce this risk. The government generally uses an "ingestion emergency planning zone" with a radius of 50 miles around each nuclear plant, although as with the inhalation EPZs, government officials acknowledge that the "ingestion EPZ" may actually extend to hundreds of miles as happened with Chernobyl (note: the NRC also states that the inhalation hazard zone can also extend out this far). It is likely that people within regions of the 320-mile zone will be required to carefully watch their food intake and eliminate certain food from their diet for up to weeks. People living in regions of known fallout deposition will likely be requested to stay indoors and keep their windows and doors shut as much as possible as well as to shut down their home's ventilation systems and to take Potassium Iodide pills if available. Evacuations in the portions of the "ingestion" zone with the greatest radioactive fallout (mainly for people under 40 – especially children – and for pregnant and nursing moms) may be recommended if there are no Potassium Iodide pills available for the public and food supplies are disrupted. During the Chernobyl nuclear plant disaster, millions of people received KI pills in this zone and a major cancer hazard zone extended out to about 320 miles (note: only limited regions within this zone actually received dangerous levels of radiation based on wind and weather effects on the fallout cloud, such as rain induced fallout deposition).

* 320 miles is the expected maximum zone of where a cancer risk could occur in a radiation emergency and where Potassium Iodide (KI) or KIO3 pills may be needed to reduce this risk. Evacuation in highly radiated areas within these zones (mainly for people under 40 – especially children – and for pregnant and nursing moms) may be necessary if there are no KI or KIO3 pills for the public. During the Chernobyl nuclear plant disaster, millions of people received KI pills and a serious cancer hazard zone extended out to about 320 miles.



[Note: see www.delorme.com for the products required to produce maps like the ones above]

Lessons from the Chernobyl Nuclear Power Plant Disaster

On April 26, 1986, the number 4 nuclear reactor at Chernobyl was torn apart by a steam explosion that resulted both because of serious human error and poor reactor design. As a result, about 30 people died within the first few months of

acute radiation exposure and thousands of others received dangerous levels of radiation that would seriously impact their long-term health. For example, **over two thousand children have developed an aggressive form of thyroid cancer associated with the Chernobyl radiation exposure** (see www.thyroid.org/annonc/nuclear.htm for details). While this cancer is treatable if detected early enough (only a few have died from this cancer), the treatments involve prolonged, invasive, and expensive procedures and dramatically impact the lives of all those involved. **Thankfully, millions of doses of Potassium Iodide (KI) pills (that successfully block the uptake of radioactive iodine) were administered to many of the children and adults in dangerously radiated regions that extended up to over 300 miles from the Chernobyl site. This extensive administration of KI tablets to children and adults is likely to have prevented hundreds, if not thousands, from contracting thyroid cancer. Unfortunately, numerous children and adults did not receive a timely dosing with KI pills, and have subsequently developed thyroid cancer.** The following quote from "Guidelines for Iodine Prophylaxis following Nuclear Accidents -- 1999 Update" by the World Health Organization (WHO) explains both the extent of the hazard zones surrounding the Chernobyl plant and the levels a radiation that caused significant problems in children.

> "Following the Chernobyl accident there were several thousands of children who accumulated a dose to the thyroid of several Gy. *{TACDA comment: 1 Rad = .01 Gray (Gy) or 1 cGy, so these children received a dose of several hundred Rads or cGy}*
>
> **Nevertheless, most of the children that have developed thyroid cancer were exposed to an estimated dose to the thyroid of less than 300 mGy. There has been an excess thyroid cancer incidence even in areas where the mean dose to the thyroid in children was estimated at 50 – 100 mGy** *{TACDA note: 50 - 100 mGy = 5 - 10 Rads or cGy}*. **The increase in incidence has been documented up to 500 km from the accident site.** This is understandable in terms of the wide area affected by radioiodine and therefore the large number of children exposed.
>
> The Chernobyl accident has thus demonstrated that significant doses from radioactive iodine can occur hundreds of kilometres from the site, beyond emergency planning zones. A sharp distinction in the requirements for stable iodine prophylaxis based on distance from the accident site cannot be made. For example, few regions in Europe are situated so far from a nuclear reactor as to preclude any potential need for stable iodine prophylaxis against inhaled or ingested radioactive iodine.
>
> 
> The Chernobyl reactor with the roof blown off
>
> Another important insight gained from the Chernobyl accident concerns the side effects from stable iodine. In Poland stable iodine, as single doses, was given to 10 million children. No serious side effects were seen, though gastrointestinal effects and minor skin rash were reported. Of newborn infants receiving 30 mg potassium iodide in their first two days of life, 0.37% (12 infants) showed a transient increase in serum thyroid stimulating hormone (TSH), combined with a decrease in serum free thyroxine (T4). This transient thyroid inhibition has had no known consequences to date. Seven million adults took stable iodine although it had not been recommended. Among these, only two severe adverse reactions were seen, both in persons with known iodine allergy. **In summary, the incidence of severe side effects from a single dose of iodine was less than 1 in 10 million in children and less than 1 in a million in adults."**

The Current Situation: Many Lessons from History Seem to be Ignored

Unfortunately, even though recommended by the President's commission after the Three Mile Island nuclear disaster and by the Nuclear Regulatory Commission (NRC) and by the American Thyroid Association (see

www.thyroid.org/annonc/nuclear.htm for details), and many other research groups, Potassium Iodide (KI) tablets are still not stockpiled and available for use by most of the endangered U.S. public in the case of a future radiation disaster (whether from an accident, terrorism, or war).

The U.S. public should wonder why other countries, like Britain, France, Germany, Switzerland, Sweden, Norway, Austria, Poland, Russia, Slovakia, Japan, Canada, and many others stockpile stable iodine pills (like Potassium Iodide tablets) to protect their public from radiation emergencies. And while a few states have some very limited KI stockpiles for use by the public in a nuclear emergency (Maine, Tennessee, Arizona, and Alabama), most of our nation's public is unprotected. Only Tennessee reportedly allows a few thousand people to stockpile KI in their homes that are adjacent to a nuclear power plant (see www.ki4u.com/#7). This is a small step in the right direction, in that to be most effective, people should be able to take KI pills as soon as a radiation health emergency exists and as soon as recommended by public health officials and/or physicians. Indeed, because of the problems associated with mass evacuations during nuclear emergencies, people in many radiated regions may be instructed to stay in their homes and close their windows and seal their house from outside air as much as possible. This was the case during the radioactive iodine release from a uranium processing plant around Tokaimura, Japan, on September 29, 1999, where several hundred thousand people were asked to stay in their homes with the windows shut. If KI pills are available in homes, then vast numbers of the public could safely stay in their houses rather than risk an evacuation or risk staying in place without the radiation blocking protection of KI pills.

One particular note of concern is that many in the government are recommending stockpiling KI tablets only in regional centers. **The problem with this suggestion is that in a true emergency, you need to rapidly get the pills into the hands of the public and this is essentially impossible in many likely scenarios if the KI pills are only stored in a regional stockpile and you are trying to conduct an evacuation at the same time.** Many experts have recommended stockpiling KI in homes and local urban centers, such as in schools, libraries, hospitals, fire stations, police stations, etc. **As mentioned above in the example of Tennessee (where KI pills are available for free to the public that lives within 5 miles of their nuclear power plant -- if people take the time in advance to go pick it up at a Health Center), for those who live closest to the nuclear power plants (that is, especially within about 20 miles of the plant), there is a need for in-home supplies of KI pills to ensure timely administration of this drug. Without home storage of KI, people may impede required evacuation activities by their need to proceed to KI distribution centers. People may also be faced with the quandary of whether to stay in place with the doors and windows shut or try to venture forth to obtain KI supplies.** In addition, local stockpiling of KI in homes and urban centers would allow the public to more readily look over the suggested use and contraindications for use (such as a known allergy to iodine as is the case with some who have allergic reactions to eating fish). Experience from Poland and other countries show that the risks are exceedingly small for taking radiation blocking KI pills -- at the recommended dosage levels that are far below the risk range of the vast majority of people -- compared to the risk of long-term cancer and thyroid abnormalities in children and young adults (less than 40 years of age) who have been exposed to radioactive iodine. The adverse reaction rate was demonstrated to be less than 1 in 10 million children and less than 1 in 1 million adults according to the World Health Organization (see "Guidelines for Iodine Prophylaxis following Nuclear Accidents -- 1999 update"). The WHO went on to say: "**In practice, this means that the risk of severe side effects can be ignored when deciding on the intervention level. Minor side effects from stable iodine prophylaxis, such as skin rash or gastrointestinal complaint, constitute no major problem." The WHO also went on to say that, based on recent studies of the Chernobyl data, pregnant women and children should probably be given stable potassium (like KI pills) if they will be exposed to as low as 1 rem of accumulated thyroid dose of radiation, which is about 25 times lower than the intervention rate previously recommended by the U.S. government (which was 25 rem -- this number may change as a result of the U.S. government's review of the Chernobyl data).** In addition, the U.S. Food and Drug Administration (FDA) recommends that Potassium Iodide be taken by the public as a radiation blocking pill in cases where the public could be exposed to dangerous levels of radioactive iodine. The new WHO guidelines provide a much more complete contraindication for use of stable iodine prophylaxis which, if followed, should further reduce the risks of widespread administrations of this drug (note, the old FDA guidelines found in books like **Nuclear War Survival Skills** and included with many of the bottles of KI sold or distributed in the past, contain too high of dosages of KI for newborns and pregnant women. The FDA will probably lower the recommended dosage for these groups akin to what is recommended by the WHO).

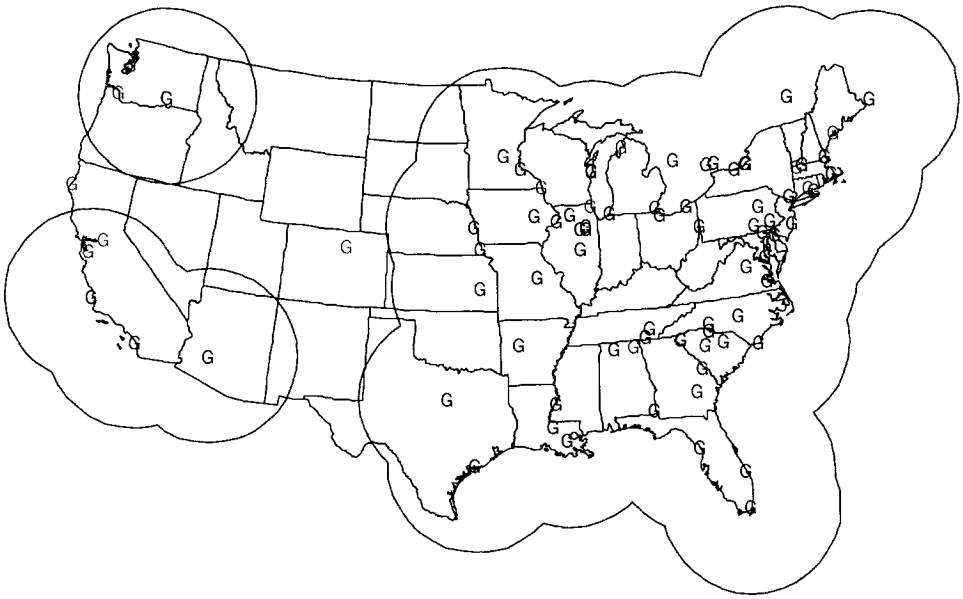
On a legal note, many in the U.S. government speak of the risks of potential lawsuits if people have some adverse reaction to KI pills if taken based on the recommendation of a government official. On the other hand, **if the government does not protect the population from known radioactive iodine risks by providing KI in local and home-based**

stockpiles as is done in numerous other countries, tens of thousands of lawsuits are likely to result in the aftermath of a major U.S. nuclear materials or power plant disaster due to associated thyroid dysfunction and cancer. This is especially true when considering the recommendations in the Report of the President's Commission on The Accident at Three Mile Island disaster and after the known risks demonstrated by the Chernobyl aftermath data reported by the WHO.

Could a major nuclear power plant disaster occur in the US? The answer is "Yes"! With what probability is greatly debated. This debate rages because of the complexity of scenarios and the politics of the nuclear power and regulatory industry. Perhaps it would suffice to say that **many complex factors could lead to a major nuclear power plant disaster in the US or Canada, to include: a major earthquake near a nuclear power plant, human error on the part of nuclear power plant workers or manufacturers or suppliers, a disgruntled or insane nuclear power plant worker, terrorist activities, prolonged power outages combined with other plant problems, etc.** And while the U.S. nuclear power plants are better engineered for safety than the Chernobyl nuclear power plant, a ruptured containment vessel at a U.S. power plant is quite possible and indeed, governmental and nuclear power industry emergency management specialists plan for it on a regular basis. **It is also well known within the nuclear power industry, that minor accidents occur on a regular basis due to human error or purposeful sabotage.**

There are 103 licensed nuclear power plants operating in the United States today and many others that operate in Canada near the northeastern U.S./Canadian border. In addition, there are numerous other non-power related nuclear reactors in the U.S. and Canada along with nuclear processing and storage facilities. The map below only shows the locations and regions where there is a radioactive iodine risk from nuclear power plants. **Many additional parts of the country are exposed to nuclear radioactive iodine risks (than from what is shown) due to the non-power reactors and nuclear materials processing and storage, such as those in Colorado, New Mexico, Utah, Idaho, and Oregon.**

U.S. and Canadian Nuclear Power Plants



What should you do as a U.S. citizen?

1. One recommendation is that you consider your radiation risks based on where you (or your loved ones) live. If needed, purchase Potassium Iodide or Iodate tablets to protect you, your family, and friends. These tablets are inexpensive and represent a form of "cheap" insurance for you or for those you care about against not only nuclear power plant emergencies, but also radioactive/nuclear terrorism and nuclear war (whether in the USA or overseas). If you live very close to a nuclear power plant, you may also want to purchase inexpensive HEPA masks to protect you and your family, etc. from inhaling radioactive particles, especially if you may have to evacuate. Please see the related Federal Emergency Management Agency (FEMA) website for other recommendations on how to prepare for nuclear power plant emergencies.
2. Another recommendation is that you write or talk with your local, state, and national government officials and let them know that you think they should locally stockpile KI tablets in communities and homes to protect the public in time of nuclear emergencies. As a minimum, citizens should have at least 10 to 14 doses of KI pills readily available (preferably, pre-distributed) within the 10 mile emergency planning zones around each nuclear power plant as well as out to 20 miles from each nuclear power plant. One dose would allow people in the most likely evacuation areas to protect themselves while preparing to evacuate and during the actual evacuation, if needed. Subsequent doses would allow people more options on how far to evacuate, and if necessary, to take additional doses if the radioactive fallout follows them to the area they evacuated to. Since radioactive iodine disperses and decays relatively rapidly (half-life of 8 days) and stable iodine continues to fill the thyroid for some time, 10 to 14 doses would normally be all that is needed if people evacuate to an area that is generally free from fallout (note: newborns and pregnant women should probably only take KI pills for 2 days duration according to the WHO). If people do not evacuate to a fallout free zone and may continue to be exposed to radioactive iodine in food supplies, then a dose duration of as long as 80 days may be needed. A strong case could also be made for pre-distributing at least 10 to 14 doses of KI pills for the 20 to 50 mile regions around nuclear power plants to minimize the need for evacuation in these regions. Outside of these zones, perhaps larger regional stockpiles could be used to provide distribution to the public who are predicted to be exposed to dangerous levels of radioactive iodine (although this requires a lot of planning on how to then distribute the KI during an actual emergency). Your voice can truly make a difference, as was illustrated when a small group of concerned citizens helped to change the KI stockpiling policy in Maine (see www.thyroid.org/annonc/nuclear.htm).

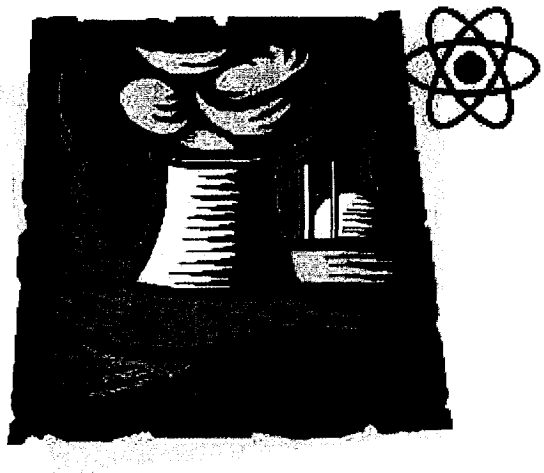
Disclaimer: TACDA provides the above information as a public service. While we have worked hard to ensure the accuracy of all of the above information, we are not infallible. We welcome any questions or comments you may have. TACDA and the author are not medical professionals and are not providing specific medical or professional advice or recommendations to any specific individual. For specific medical advice for you or your associates, please consult a physician.

TACDA is now selling *Rad Block* ™ Potassium Iodide Tablets!	***Rad Block*** ™	**Other?**
Rad Block ™ uses a formulation that is kid friendly. Children 3 years and above can take 1 tablet, rather than the half tablet (that can be bitter), used by some other brands.	√	
Potassium Iodide (KI), as used in ***Rad Block*** ™, is recommended by the World Health Org over products with Potassium Iodate (KIO3) since KIO3 can cause greater intestinal irritation.	√	
Rad Block ™ provides key WHO 2000 dosages & warnings for children under 3, neonates (both for under & over 1 week old), for pregnant & nursing moms, and for adults 40 & over.	√	
Rad Block ™ uses better packaging, to include desiccant, two safety seals, childproof cap, and the most complete and up-to-date dosage and warning data right on the bottle.	√	
Rad Block ™ is produced in an FDA approved facility with approved labeling, such as including an NDC # (used by Poison Control centers, etc.), lot #, and expiration date.	√	

Please also note that the WHO states: **"There is no decisive difference in shelf life between KIO3 and KI."**

Special intro price of $12.95 for members and $16.95 for non-TACDA members. Quantity discounts available. Call TACDA at 1-800-425-5397 to order!

Nuclear Power Plant Emergency Guidelines from FEMA



If You Are Alerted

- Remember that hearing a siren or tone alert radio does not mean you should evacuate. It means you should promptly turn to an EAS station to determine whether it is only a test or an actual emergency.
- Tune to your local radio or television station for information. The warning siren could mean a nuclear power plant emergency or the sirens could be used as a warning for tornado, fire, flood, chemical spill, etc.
- Check on your neighbors.
- Do not call 911. Special rumor control numbers and information will be provided to the public for a nuclear power plant emergency, either during the EAS message, in the utilities' public information brochure, or both.
- In a nuclear power plant emergency, you may be advised to go indoors and, if so, to close all windows, doors, chimney dampers, other sources of outside air, and turn off forced air heating and cooling equipment, etc.

If You Are Advised to Evacuate the Area

- Stay calm and do not rush
- Listen to emergency information
- Close and lock windows and doors
- Turn off air conditioning, vents, fans, and furnace
- Close fireplace dampers

Take a few items with you. Gather personal items you or your family might need:

- Flash light and extra batteries
- Portable, battery operated radio and extra batteries
- First aid kit and manual
- Emergency food and water
- Essential medicines
- Cash and credit cards

Use your own transportation or make arrangements to ride with a neighbor. Public transportation should be available for those who have not made arrangements. Keep car windows and air vents closed and listen to an EAS radio station.

Follow the evacuation routes provided. If you need a place to stay, congregate care information will be provided.

If Advised to Remain at Home

- Bring pets inside.
- Close and lock windows and doors
- Turn off air conditioning, vents, fans and furnace
- Close fireplace dampers
- Go to the basement or other underground area
- Stay inside until authorities say it is safe

When Coming In From Outdoors

- Shower and change clothing and shoes
- Put items worn outdoors in a plastic bag and seal it.

The thyroid gland is vulnerable to the uptake of radioactive iodine. If a radiological release occurs at a nuclear power plant, **States may decide to provide the public with a stable iodine, potassium iodide,** which saturates the thyroid and protects it from the uptake of radioactive iodine. Such a protective action is at the option of State, and in some cases, local government.

Remember your neighbors may require special assistance--infants, elderly people, and people with disabilities.

School Evacuations

If an incident involving an actual or potential radiological release occurs, consideration is given to the safety of the children. If an emergency is declared, students in the 10-mile emergency planning zone will be relocated to designated facilities in a safe area. Usually, as a precautionary measure, school children are relocated prior to the evacuation of the general public.

For Farmers and Home Gardeners

If a radiological incident occurs at the nuclear facility, periodic information concerning the safety of farm and home grown products will be provided. Information on actions you can take to protect crops and livestock is available from your agricultural extension agent.

Crops

Normal harvesting and processing may still be possible if time permits. Unharvested crops are hard to protect.

Crops already harvested should be stored inside if possible.

Wash and peel vegetables and fruits before use if they were not already harvested.

Livestock

Provide as much shelter as possible. Take care of milk-producing animals.

Provide plenty of food and water and make sure shelters are well-ventilated. Use stored feed and water, when possible.

Three Ways to Minimize Radiation Exposure

There are three factors that minimize radiation exposure to your body: Time, Distance, and Shielding.

Time--Most radioactivity loses its strength fairly quickly. Limiting the time spent near the source of radiation reduces the amount of radiation exposure you will receive. Following an accident, local authorities will monitor any release of radiation and determine the level of protective actions and when the threat has passed.

Distance--The more distance between you and the source of the radiation, the less radiation you will receive. In the most serious nuclear power plant accident, local officials will likely call for an evacuation, thereby increasing the distance between you and the radiation.

Shielding--Like distance, the more heavy, dense materials between you and the source of the radiation, the better. This is why local officials could advise you to remain indoors if an accident occurs. In some cases, the walls in your home or workplace would be sufficient shielding to protect you for a short period of time.

What you can do to stay informed:

Attend public information meetings. You may also want to attend post-exercise meetings that include the media and the public.

Contact local emergency management officials, who can provide information about radioactivity, safety precautions, and state, local, industry and federal plans.

Ask about the hazards radiation may pose to your family, especially with respect to young children, pregnant women and the elderly.

Ask where nuclear power plants are located.

Learn your community's warning systems.

Learn emergency plans for schools, day care centers, nursing homes--anywhere family members might be.

Be familiar with emergency information materials that are regularly disseminated to your home (via brochures, the phone book, calendars, utility bills, etc.) These materials contain educational information on radiation, instructions for evacuation and sheltering, special arrangements for the handicapped, contacts for additional information, etc.

TACDA Conference Tapes Available

(from November 1999 Conference)

[Disclaimer note. These videos contain only limited editing from the actual presentations given at the conference and are not broadcast quality (however, they are an excellent information resource for concerned citizens). TACDA provides them as a public service. All information in these tapes is for general understanding. Before taking any specific personal actions, professional advice should be sought.]

Title – Speaker – Description – Time	**Available for purchase: $14**
Call 1-800-425-5397 to order! ↓	
"Preparedness in the Year 2000" Kevin Briggs (former TACDA President) Covers the threats of key natural and manmade disasters throughout the U.S., to include terrorism and war, and provides insights into issues and mitigation strategies [60 minutes]	Yes
"Surviving Weapons of Mass Destruction" – Sharon Packer (President of Civil Defense Volunteers of Utah, MS in Nuclear Engineering) Covers nuclear, chemical, and biological threats and hazard mitigation strategies as well as a brief explanation of EMP [32 minutes]	Yes
"From MAD (Mutual Assured Destruction) to MASS (Mutual Assured Security & Survival)" – Nancy Greene (President of TACDA, former Editor of HUMINT Magazine and a well-known international relations expert) Covers the history of the MAD policy, why the DoD has historically neglected active and passive U.S. population defenses, and recommends a mutual Russian & U.S. missile defense strategy. [36 min.]	Yes
"Historical Swiss and Russian Civil Defenses" – Ed York (international civil defense expert, worked on the Manhattan Project and many civil defense trade-off studies). Covers his first-hand experiences with the Swiss Civil Defenses and his extensive research into Russian Civil Defense based on debriefings of Russian immigrants. [30 minutes]	Yes
"The News Media, Crisis Management, and the War in Kosovo" – Charles Wiley (Accuracy in Media spokesperson, Veteran War Correspondent (jailed by communists on several occasions), International Civil Defense Reporter) Exposes how dangerous this war was and how the media was often manipulated to produce one-sided reporting.	Yes
"US Infrastructure Issues"– Bron Cikotas (former head of the Defense Nuclear Agency's EMP Division; consultant on U.S. infrastructure) -- Available only in audio cassette for $5.00	Yes, audio only
"A Physician's Response to Modern Threats" – Dr. Jane Orient (President of Doctors for Disaster Preparedness)	Yes
"US Earthquake Hazards and Mitigation" – Waverly Person, US Geological Survey	Yes
"EMP – Issues and Answers"– Bron Cikotas (former head of the Defense Nuclear Agency's EMP Division; consultant on U.S. infrastructure) – Audiotape only.	Yes
"Economic Aspects of Disasters" – David Horton (Constitutional lawyer and economics historian)	Yes
"Needed: A Radical Rebalancing of Our Defenses" – Kevin Briggs (former President, TACDA) Covers the historical development of Civil Defense in the U.S. and explains why we need both active and passive defense for both manmade and natural disasters. Explains why the current National Missile Defense (NMD) program will not be effective against many threats and discusses how a more effective NMD could be fielded.	Yes

New from FEMA ...

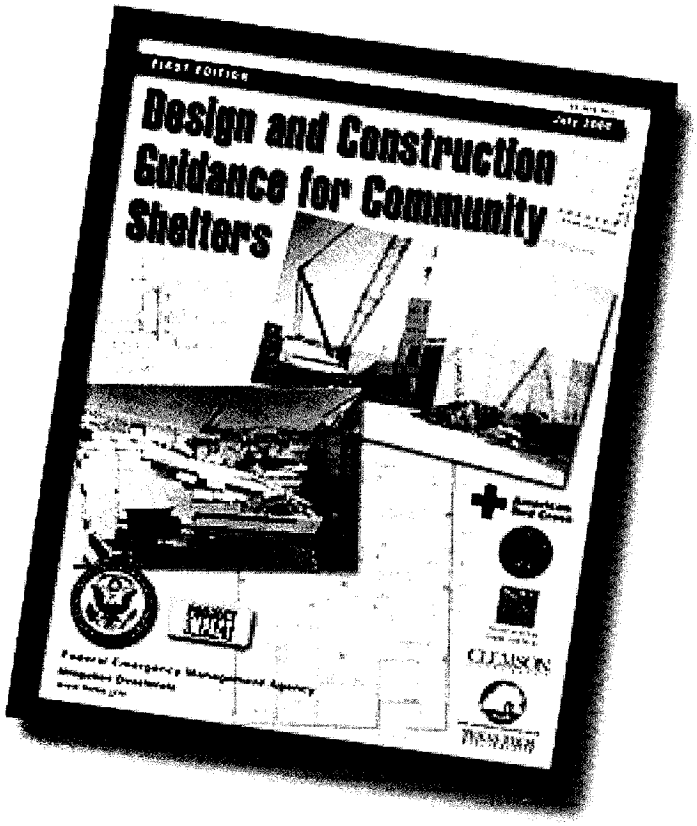
Design and Construction Guidance for Community Shelters

FEMA recently published a manual with important information about the design and construction of community shelters for protection during tornadoes and hurricanes.

The manual has information on both stand-alone shelters and shelters built inside or attached to a larger building. The shelters are for protection during the tornado or hurricane and not designed to be used as long-term disaster recovery shelters.

This document is a guidance manual for engineers, architects, building officials, and prospective shelter owners. It presents important information about the design and construction of community shelters that will provide protection during tornado and hurricane events. For the purpose of this manual, a community shelter is defined as a shelter that is designed and constructed to protect a large number of people from a natural hazard event. The number of persons taking refuge in the shelter will typically be more than 12 and could be up to several hundred or more. These numbers exceed the maximum occupancy of small, in-residence shelters recommended in **FEMA 320**, ***Taking Shelter From the Storm: Building a Safe Room Inside Your House.***

To order a copy of this Publication, call the FEMA Publications Distribution Facility at **1-800-480-2520**. Ask for **FEMA 361**. The FEMA shelter benefit/cost model, is provided on a CD-ROM as part of Appendix A. The CD-ROM also includes a detailed User's Guide that contains instructions for installing the B/C model software and conducting sample runs. The User's Guide is provided in the form of a Portable Document Format (PDF) file.

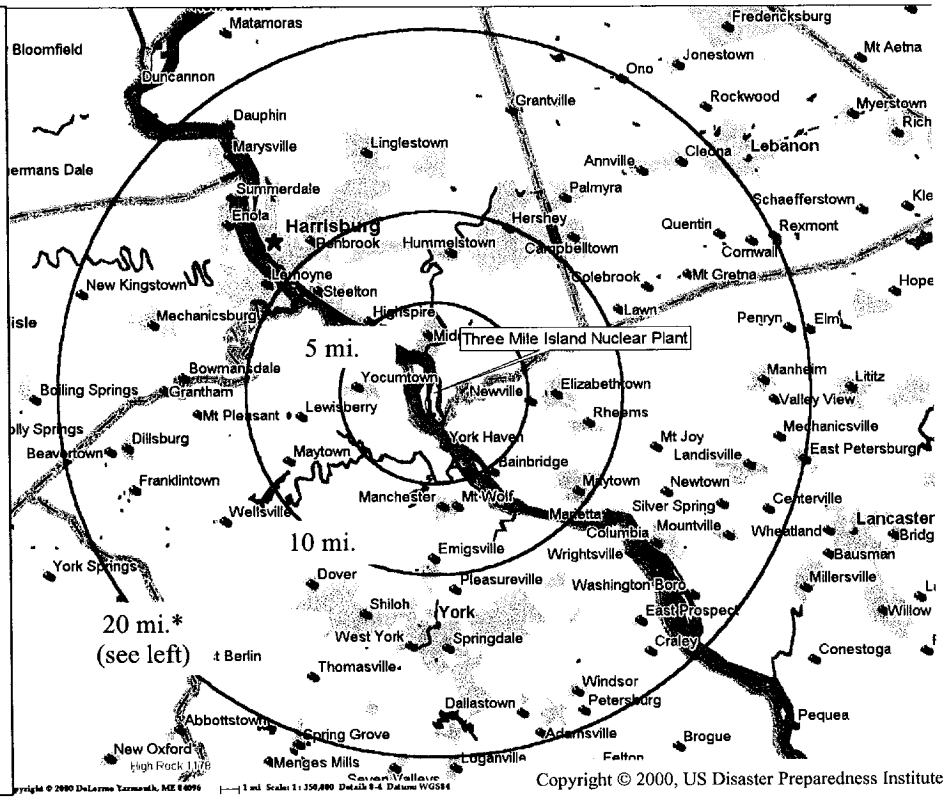


FEMA 361
FIRST EDITION
Mitigation Directorate
www.fema.gov

Federal Emergency Management Agency
July 2000

Are you prepared for a modern Chernobyl or Three Mile Island?

During the Three Mile Island nuclear plant disaster, pre-school and pregnant or nursing moms were evacuated within 5 miles of the plant and people were instructed to stay indoors for a 10-mile region. 10 and 20-mile evacuation plans were prepared, but thankfully were not required because the containment vessel did not burst. If it had, then thousands to millions of people may have had to rapidly evacuate. During the severe Chernobyl nuclear plant disaster, people were evacuated (many permanently) from a 30-kilometer zone around the plant. Could this happen today in the USA? Are you prepared if one of the 103 nuclear power plants in the U.S. or Canada had a severe accident? Please see the related articles inside this Journal for helpful answers & info.



See page 2 for more information on Nuclear Power Plant Hazard Issues.

Are You Ready? If Unsure -- **Check this box.**

Join the American Civil Defense Association (TACDA)...and help **promote sensible precautions to disasters**. An annual membership includes a year's subscription to the *Journal of Civil Defense* plus discounts on purchases at the TACDA Store.

Annual single family rate: $ 25; Annual organization rate: $100

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

Sign up by contacting:

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Web: www.tacda.org

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