What are YOU gonna do about...
A Nuclear Power Plant Emergency?

Please note: Nukes [nuclear devices] and dirty bombs [radiological dispersion devices or RDDs] are both covered in the next topic called TERRORISM, but review next several pages before moving on.

The World Nuclear Association reports as of October 2008 there are 439 commercial nuclear power reactors in 30 countries with 367 more reactors under construction or planned. The U.S. has over 100 commercial power plants and Canada has 20 power stations meaning millions of citizens live within 10 miles (16 km) of an operating reactor. And WNA reports there are 280 research reactors (54 in the U.S.) mainly on university campuses.

Even though governments and associations monitor and regulate construction and operation of plants, accidents are possible and do happen. An accident could result in dangerous levels of radiation that could affect the health and safety of the public living near a nuclear power plant, as well as people many miles away depending on winds and weather - so millions of North Americans could potentially be affected.

Some other incidents involving possible radiation exposure may be a nuclear missile or suitcase nuke (plutonium creates massive energy and destruction) or a "dirty bomb". (Again, these are covered in TERRORISM.)

How is radiation detected?

You cannot see, feel, taste or smell radiation, but special instruments can detect even the smallest levels of it. If radiation is released, authorities will monitor levels of radioactivity to determine the potential danger so they can alert and protect the public. *Learn about detection devices on page 116.*

What is best way to reduce radiation exposure?

Limit the amount of radiation you are exposed to by doing 3 things ...

Distance - The more distance between you and the source of radiation, the less you'll receive. During a serious accident you may be told to evacuate.

Shielding - Heavy, dense materials between you and radiation is best - this is why you want to stay indoors since the walls in your home should be good enough to protect you in some cases… but listen to radio and TV to learn if you need to evacuate.

Time - Most radioactivity loses its strength rather quickly. Limiting your time near the source of radiation reduces the amount you receive.

What is the most dangerous part of a nuclear accident?

Radioactive iodine - nuclear reactors contain many different radioactive products, but a dangerous one is radioactive iodine which, once absorbed, can damage cells of the thyroid gland. The greatest population that suffers in a nuclear accident is **children** (including unborn babies) since their thyroid is so active, but all people are at risk of absorbing radioactive iodine.

How can I be protected from radioactive iodine?

Potassium iodide (KI) - can be purchased over-the-counter now (usually from companies selling disaster-related kits) and is known to be an effective thyroid-blocking agent. In other words, it fills up the thyroid with good iodine that keeps radioactive iodine from being absorbed into our bodies.

What if I am allergic to iodine?

According to the United States Nuclear Regulatory Commission Office of Nuclear Material Safety and Safeguards, the FDA suggests that risks of allergic reaction to potassium iodide are minimal compared to subjecting yourself to cancer from radioactive iodine. Ask your doctor or pharmacist what you should keep on hand in the event of an allergic reaction.

Many European countries stockpile potassium iodide (KI), especially since the Chernobyl incident. Several states are considering or already have stockpiles of KI ready in case of an accident or incident.

As of Jan 2005, the FDA has approved 3 KI products - Iosat, ThyroSafe, and ThyroShield. Learn more at www.fda.gov (do a search on KI) or www.bt.cdc.gov/radiation/ki.asp

Community Planning for Emergencies (U.S. and Canada)

Local, state and provincial governments, Federal agencies and utilities have developed emergency response plans in the event of a nuclear power plant accident.

United States' plans define 2 "emergency planning zones" (EPZs)

- **Plume Exposure EPZ** - a 10-mile radius from nuclear plant where people may be harmed by radiation exposure
  NOTE: People within a 10-mile radius are given emergency information about radiation, evacuation routes, special arrangements for handicapped, etc. via brochures, phone books, and utility bills.

- **Ingestion Exposure EPZ** - about a 50-mile radius from plant where accidentally released radioactive materials could contaminate water supplies, food crops and livestock

Canada's Provincial Nuclear Emergency Response Plans define 3 "zones"

- **Contiguous Zone** - approximately 3 kilometres from nuclear facility where evacuation and sheltering may be ordered
- **Primary Zone** - approximately 10 kilometres from the nuclear facility where evacuation and sheltering may be ordered
- **Secondary Zone** - approximately 50 kilometres from the nuclear facility where radioactive contamination could cause monitoring and/or bans on some food and water sources

  NOTE: Public Education brochures are available to residents and businesses within the Primary Zone (10 km) of each nuclear facility.

Before a Nuclear Power Plant Emergency:

Learn the buzzwords - Know terms used in both countries to describe a nuclear emergency at a plant: **U.S.** / **(Canada)**...

- **Notification of Unusual Event / (Reportable Event)** - a small problem has occurred. No radiation leak is expected. Federal, state/provincial and county/municipal officials will be told right away. No action on your part will be necessary.
- **Alert / (Abnormal Incident)** - a small problem has occurred, and small amounts of radiation could leak inside plant. This will not affect you and you shouldn't have to do anything.
- **Site Area Emergency / (Onsite Emergency)** - a more serious problem… small amounts of radiation could leak from the plant. If necessary, officials will act to ensure public safety. Area sirens may be sounded and listen to your radio or TV for information.
- **General Emergency / (General Emergency)** - the MOST serious problem… radiation could leak outside the plant and off the plant site. In most cases sirens will sound so listen to local radio or TV for reports and updates. State/Provincial and county/municipal officials will act to assure public safety and be prepared to follow their instructions!

Learn signals - Ask about your community's warning system and pay attention to "test" dates to learn if you can HEAR it. Nuclear power plants are required to install sirens and other warning devices to cover a 10-mile area around the plant in the U.S. (If you live outside the 10-mile area you will probably learn of the event through local TV and radio, but just be aware winds and weather can impact areas as far as 200 miles [320 km] away!!)

Learn risks - Ask the company operating the plant for brochures and data.

Make a plan - Review Section 1 to develop a **Family Emergency Plan** and **Disaster Supplies Kit**. Double check on emergency plans for schools, day cares or places family may be and where they'll go if evacuated. And please review the Nuclear section in TERRORISM topic to learn more about long-term sheltering, protection from fallout, radiation detection devices, etc.

Go? - Listen to authorities and leave if told to go. *(see EVACUATION)*

During a Nuclear Power Plant Emergency:

Stay calm - Not all accidents release radiation - may be contained in plant.

Listen - Turn on radio or TV. Authorities will give specific instructions and information… pay attention to what THEY tell you rather than what is written in this Manual since they know the facts for each specific incident.

Stay or go..? - Evacuate if told to do so by local authorities ... and ...

- Grab your **Disaster Supplies Kit**.
- Close doors, windows and fireplace damper.
- Cover your mouth and nose with face mask or cloth.
- Close car windows and vents and use "re-circulating" air.
- Keep listening to radio for evacuation routes & updates.

As long as you are NOT told to evacuate, do the following…

IF INDOORS - Stay inside and prepare to "shelter-in-place"...

- Close doors and windows and your fireplace damper.
- Turn off air conditioner, ventilation fans, furnace and other intakes (they pull in air from outside).
- Go to a basement or underground area (if possible).
- Keep a battery-operated radio with you to hear updates.
- Stay inside until authorities tell you it is safe to go out!

IF OUTDOORS - Get indoors as soon as possible!

- Cover mouth and nose with a cloth or napkins and find shelter.
- Once inside, remove clothing, shower & wash hair and put on fresh clothing and different shoes. Put clothes and shoes you were wearing in plastic bags, seal and store. Local authorities can tell you what to do with bags.

IF IN A VEHICLE - Keep windows up, close vents, use "recirculating" air and keep listening to radio for updates. If possible, drive away from site.

Pets & livestock - Get them in shelters with clean food and water that has not been exposed to air-borne radiation, especially milk-producing animals.

Food - Put food in covered containers or in refrigerator -- any food that was not in a covered container should be washed first.

Take potassium iodide..? - IF radioactive iodine has been released into the air from a power plant accident, some states *may* decide to provide KI pills mentioned at beginning of this topic to people in a 10-mile radius.

(In June 2002 President George W. Bush signed a provision that gave state and local governments supplies of potassium iodide for people within 20 miles of a nuclear power plant, increasing protection beyond the Nuclear Regulatory Commission's current 10-mile radius.[5] This is at the option of state and local government and realize it will take time for them to disperse to citizens ... unless you prepare in advance and keep KI handy.)

NOTE: Take KI pills ONLY as directed by local public health authorities and follow instructions on the package exactly! *(see page 73)*

After a Nuclear Power Plant Emergency:

Listen - Keep radio and TV tuned in -- stay in until authorities say all clear.

Clean up - If you were possibly exposed to radiation...

- **store clothes & shoes** - put clothing and shoes in tightly sealed containers or plastic bags and ask health officials what to do with them
- **shower** - wash your body and hair to remove radioactive particles
- **land and property** - ask authorities how to clean up area

Weird symptoms - Seek medical attention if you have symptoms like upset stomach or feel queasy after a reported incident since it could be related to radiation exposure. *(see page 118 for more about radiation sickness)*

Gardens & crops – Authorities will provide information concerning safety of farm and homegrown products -- or check with agricultural extension agent. Unharvested crops are hard to protect but crops that are already harvested should be stored inside, if possible.

Milk - Local officials should inspect cows' and goats' milk before using.

Recovery tips - Review TIPS ON RECOVERING FROM A DISASTER

More tips - See TERRORISM for more information about a nuke crisis.