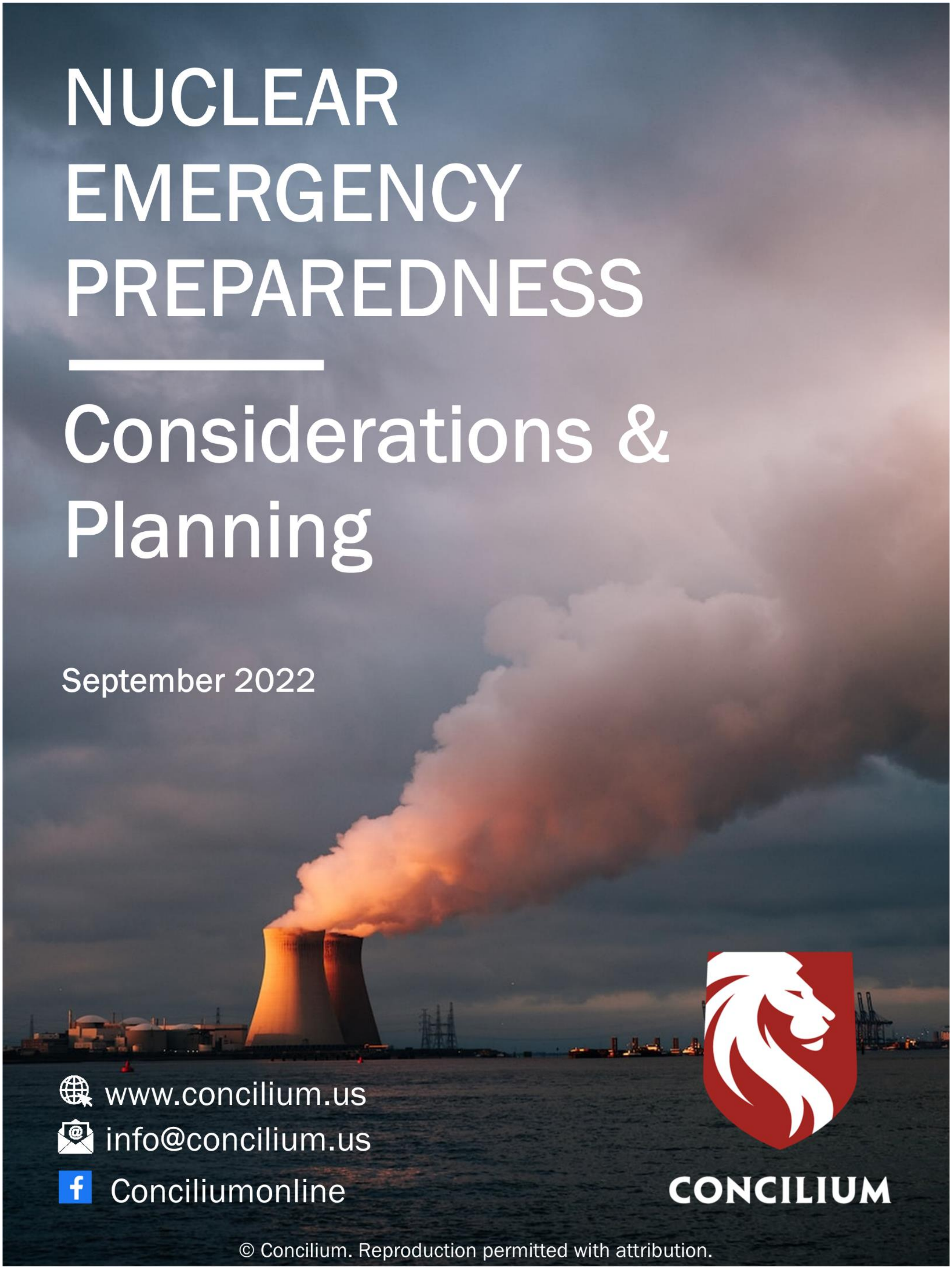

NUCLEAR EMERGENCY PREPAREDNESS

Considerations & Planning

September 2022

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From the Author

This information has been drawn from emergency planning efforts developed by Ready.gov, United State Nuclear Regulatory Commission (USNRC), International Atomic Energy Agency (IAEA), United States Food and Drug Administration (FDA), Commonwealth of Virginia Department of Emergency Management, Dominion Energy, and other sources. Attribution will be given, and sources cited as appropriate throughout the document.

My first nuclear preparedness documents were written in 2011-2012 to help equip faith-based workers responding to the Fukushima nuclear disaster in 2011 and in response to the North Anna Earthquake that impacted the North Anna Nuclear Generating Station in Virginia in 2012. Now, given the current situation surrounding the Zaporizhzhia Nuclear Power Station in southeast Ukraine (as of September 2022), it seemed a good time to update my original work.

If there is any good news when it comes to nuclear disasters, it is the fact there is excellent information, experience, and perspective documented online on how to prepare for, and respond to, a nuclear emergency. While large-scale radiological incidents are quite few (there have been only two Level 7 nuclear disasters in history: Chernobyl in 1986 and Fukushima in 2011), there have been significant lessons learned from the many minor incidents that have taken place through the years that can help guide preparation for a potential nuclear incident.

Finally, this document is not an exhaustive resource. It is intended to serve as a tool to help prepare faith-based workers who live near nuclear power stations for a potential nuclear emergency, as well as empower effective ministry in the event of a nuclear incident. To be very clear, this document is not a replacement for official guidance provided by various authorities. Instead, it is a resource designed to help faith-based workers and their agencies prepare for a nuclear event regardless of where they are serving in the world.

Basic Information on Nuclear Incidents and Emergencies

The International Nuclear and Radiological Event Scale (INES) is a tool for communicating the safety significance of nuclear and radiological events to the public.[1]

The INES was developed to provide both criteria and indicators that help provide coherent reporting of nuclear and radiological events by different official authorities around the world. The INES scale provides eight levels on INES scale, ranging from 0 to 7. Within those seven levels are three incident-levels (1-3) and four accident-levels (4-7). There is also a level 0 which denotes a “deviation” of no safety significance to the public.

The level on the scale is determined by the highest of three scores: off-site effects, on-site effects, and defense in-depth degradation.

The INES table on the next page provides both classifications and examples of nuclear incidents and emergencies.[2]

[1] https://www.iaea.org/resources/databases/international-nuclear-and-radiological-event-scale
[2] Source: https://en.wikipedia.org/wiki/International_Nuclear_Event_Scale

International Nuclear and Radiological Event Scale			
Threat Level	**Classification**	**Description**	**Examples**
0	**Deviation**	No safety significance.	• 13 February 2006, Tokaimura (Japan): Fire in Nuclear Waste Volume Reduction Facilities of the Japanese Atomic Energy Agency . • 17 December 2006, Atucha (Argentina): Reactor shutdown due to tritium increase in reactor compartment. • 4 June 2008, Krško (Slovenia): Leakage from the primary cooling circuit. • 10 December 2020, Eurajoki (Finland): Olkiluoto reactor shutdown due to dissolved filter substances in reactor water.
1	**Anomaly**	Impact on defense-in-depth: • Overexposure of a member of the public in excess of statutory annual limits. • Minor problems with safety components with significant defense-in-depth remaining. • Low activity lost or stolen radioactive source, device, or transport package. (Arrangements for reporting minor events to the public differ from country to country.)	• July 2008, Tricastin Drôme (France): Leak of 18,000 L (4,000 imp gal; 4,800 US gal) of water containing 75 kg (165 lb) of unenriched uranium into the environment. • 8 August 2009, Gravelines Nord (France): During the annual fuel bundle exchange in reactor 1, a fuel bundle snagged onto the internal structure. Operations were stopped, the reactor building was evacuated and isolated in accordance with operating procedures. • 5 April 2012, Penly Seine-Maritime (France): An abnormal leak on the primary circuit of the reactor 2 was found in the evening of 5 April 2012 after a fire in reactor 2 around noon was extinguished. • 15 May 2016, Sellafield Cumbria (United Kingdom): Loss of active ventilation within the Magnox Swarf Storage Silo. Extract fans were switched off for 16 hours in order to undertake some improvements to the ventilation system, but when it was restarted the system indicated zero flow. • 1 March 2018, Sellafield Cumbria (United Kingdom): Due to cold weather, a pipe failed causing water from the contaminated basement to flow into a concrete compound, which was subsequently discharged into the Irish Sea. • 2 May 2018, Hunterston B nuclear power station Ayrshire (United Kingdom): Cracks of the graphite bricks in Advanced Gas-cooled Reactor 3 were found during an inspection. About 370 fractures were discovered, above the operational limit of 350. • 2019, Sellafield Legacy (United Kingdom): Pond's sump tank detected that liquid levels in a concrete sump tank had fallen.

2	**Incident**	Impact on people and environment: • Exposure of a member of the public in excess of 10 mSv. • Exposure of a worker in excess of the statutory annual limits. Impact on radiological barriers and control: • Radiation levels in an operating area of more than 50 mSv/h. • Significant contamination within the facility into an area not expected by design. Impact on defense-in-depth: • Significant failures in safety provisions but with no actual consequences. • Found highly radioactive sealed orphan source, device, or transport package with safety provisions intact. Inadequate packaging of a highly radioactive sealed source.	• 1977, Gundremmingen Nuclear Power Plant (Germany): Weather caused short-circuit of high-voltage power lines and rapid shutdown of the reactor. • 1998, Hunterson B nuclear power station Ayrshire (United Kingdom): Emergency diesel generators for reactor cooling pumps failed to start after multiple grid failures during the Boxing Day Storm of 1998. • 1999, Shika Nuclear Power Plant (Japan): Criticality incident caused by dropped control rods; covered up until 2007. • December 1999, Blayais Nuclear Power Plant flood (France) • July 2006, Forsmark Nuclear Power Plant (Sweden): Backup generator failure; two were online but the fault could have caused all four to fail. • April 2008, Ascó Nuclear Power Plant (Spain): Radioactive contamination. • 2017, Sellafield (United Kingdom): Confirmed exposure to radiation of individuals which exceed or are expected to exceed, the dose limits (2 incidents in this year). • 2019, Sellafield Magnox Swarf Storage Silo (United Kingdom): Confirmed silo liquor imbalance caused by a leak in the legacy storage facility leading to contamination below ground level.
3	**Serious Incident**	Impact on people and environment: • Exposure in excess of ten times the statutory annual limit for workers. • Non-lethal deterministic health effect (e.g., burns) from radiation. Impact on radiological barriers and control: • Exposure rates of more than 1 Sv/h in an operating area. • Severe contamination in an area not expected by design, with a low probability of significant public exposure.	• 1989, Vandellòs I nuclear accident in Vandellòs (Spain): Fire destroyed many control systems; the reactor was shut down. • 2002, Davis-Besse Nuclear Power Station (United States): Negligent inspections resulted in corrosion through 6 in 150 mm of the carbon steel reactor head leaving only 3⁄8-inch (9.5 mm) of stainless-steel cladding holding back the high-pressure reactor coolant. • 2003, Paks Nuclear Power Plant (Hungary): Fuel rod damage in a cleaning tank. • 2005, THORP plant, Sellafield (United Kingdom): Very large leak of a highly radioactive solution held within containment.

		Impact on defense-in-depth: • Near accident at a nuclear power plant with no safety provisions remaining. • Lost or stolen highly radioactive sealed source. • Misdelivered highly radioactive sealed source without adequate procedures in place to handle it.	
4	**Accident with Local Consequences**	Impact on people and environment: • Minor release of radioactive material unlikely to result in implementation of planned countermeasures other than local food controls. • At least one death from radiation. Impact on radiological barriers and control: • Fuel melt or damage to fuel resulting in more than 0.1% release of core inventory. • Release of significant quantities of radioactive material within an installation with a high probability of significant public exposure.	• 1955 to 1979, Sellafield (United Kingdom): Five separate incidents from 1955-1979. • 1961, SL-1 Experimental Power Station (United States): Reactor reached prompt criticality, killing three operators. • 1969; 1980, Saint-Laurent Nuclear Power Plant (France): 1969-Partial core meltdown. 1980-graphite overheating. • 1969, Lucens reactor (Switzerland): Blocked coolant channel caused fuel assembly to melt and catch fire; no radiation exposure to staff or public. • 1977, Jaslovské Bohunice (Czechoslovakia): Partial core meltdown resulted in minor release of radiation to reactor building. • 1982, Andreev Bay nuclear accident (Soviet Union): A spent nuclear fuel storage facility was damaged and caused approximately 700,000 tons (770,000 tons) of highly radioactive water to leak into the Barents Sea. • 1983, Buenos Aires (Argentina): Criticality accident on research reactor RA-2 during fuel rod rearrangement killed one operator and injured two others. • 1999, Tokaimura nuclear accident (Japan): Three inexperienced operators at a reprocessing facility caused a criticality accident; two of them died. • 2010, Mayapuri (India): A university irradiator was sold for scrap and dismantled by dealers unaware of the hazardous materials.
5	**Accident with Wider Consequences**	Impact on people and environment: • Limited release of radioactive material likely to require implementation of some	• 12 December 1952, Chalk River, Ontario (Canada): First Chalk River accident; reactor core damaged. • 10 October 1957, Windscale fire at Sellafield (United Kingdom): Annealing of graphite moderator at a military air-cooled reactor caused the graphite and the metallic uranium fuel to

		planned countermeasures. • Several deaths from radiation. Impact on radiological barriers and control: • Severe damage to reactor core. • Release of large quantities of radioactive material within an installation with a high probability of significant public exposure. This could arise from a major criticality accident or fire.	catch fire, releasing radioactive pile material as dust into the environment. 100 to 240 cancer deaths were caused by the incident. • 28 March 1979, Three Mile Island accident, Harrisburg, Pennsylvania (United States): A combination of design and operator errors caused a gradual loss of coolant, leading to a partial meltdown. The amounts of radioactive gases released into the atmosphere are still not known, so injuries and illnesses that have been attributed to this accident can only be deduced from epidemiological studies. • 13 September 1987, Goiânia accident (Brazil): An unsecured cesium radiation source left in an abandoned hospital was recovered by scavenger thieves unaware of its nature and sold at a scrapyard. 249 people were contaminated and 4 died.
6	**Serious Accident**	Impact on people and environment: Significant release of radioactive material likely to require implementation of planned countermeasures.	To date, there has been one Level 6 accident: • 29 September 1957, Kyshtym disaster at Mayak Chemical Combine (MCC) (Soviet Union): A failed cooling system at a military nuclear waste reprocessing facility caused an explosion with a force equivalent to 70–100 tons of TNT. About 70 to 80 metric tons of highly radioactive material were carried into the surrounding environment. At least 22 villages were evacuated.
7	**Major Accident**	Impact on people and environment: Major release of radioactive material with widespread health and environmental effects requiring implementation of planned and extended countermeasures.	To date, there have been two Level 7 accidents: • 26 April 1986, Chernobyl disaster,Chernobyl, Ukraine, USSR (Soviet Union): Unsafe conditions during a test procedure resulted in a criticality accident, leading to a powerful steam explosion and fire that released a significant fraction of core material into the environment, resulting in an eventual death toll of 4,000–27,000. As a result of the plumes of radioisotopes, a 30 km (19 mi) exclusion zone around the reactor was established. • 11 March 2011, Fukushima Daiichi nuclear disaster, Fukushima (Japan): Major damage to the backup power and containment systems caused by the 2011 Tōhoku earthquake and tsunami resulted in overheating and leaking from some of the Fukushima I nuclear plant's reactors. A temporary exclusion zone of 20 km (12 mi) was established around the plant.

Emergency Planning Zones

When considering response to a nuclear incident, it is important to remember that proximity to the nuclear incident will determine primary and secondary response steps. These response steps are determined by Emergency Planning Zones (EPZs). According to the USNRC, the size and shape of an EPZ varies due to detailed consideration of the specific power plant, site conditions, geographical features of the area, and demographic information. EPZ-specific strategies provide a strong starting point for implementing additional measures beyond the planning zone, if extremely unlikely events unfold.[3]

EPZs are broken into two general zones from ground zero (the location of the incident): 10-mile (16 KM) radius and 50-mile (80 KM) radius. The 10-mile EPZ is designated a "plume exposure pathway[4]." Emergency action planning for those living within a 10-mile radius of a nuclear powerplant should include plans to reduce exposure to radiation, including inhaling or ingesting radioactive particles. Contingency planning within a 10-mile EPZ includes sheltering in place, evacuation planning, wearing KN95 or similar masks to avoid inhaling radioactive particles, and the use of potassium iodide pills as appropriate.

The 50-mile EPZ is focused on concerns with ingestion of radioactive food for both humans and animals (apart from fruits and vegetables, farm animals such as cattle that eat grass with high radioactivity will pass that to humans in both milk and meat). Water contamination is also of significant concern, including ground water.[5]

Emergency Notifications

To begin, it is important to say that every location, just like every country and culture in the world, is different. That means how local populations may be warned of a nuclear incident will be different as well. Remember: situational awareness is for not without situational understanding. Thus, it is incumbent upon every faith-based worker to understand the threats in their service area; whether criminal, ideological, natural, or manmade. This includes the location of nuclear power plants that may impact life and ministry in your area.

If a nuclear emergency occurs near your location, *typically* (and this can vary widely based on location) local authorities should be the first to alert of an incident. Once that alert is made, emergency officials should begin implementation of local and regional emergency response plans.

It is not unlikely that your first notification of a nuclear emergency would come from emergency sirens, klaxons, or other warning devices located within the 10-mile Emergency Planning Zone around the power station. For many years sirens have been a primary means

[3] "A keystone of any plant's preplanned protective action strategy involves two emergency planning zones (EPZs) around the plant." USNRC. https://www.nrc.gov/about-nrc/emerg-preparedness/about-emerg-preparedness/planning-zones.html
[4] An example of a 10-Mile Emergency Planning Zone Map can be found here: https://www.maricopa.gov/DocumentCenter/View/56378/PVGS_10Mile_PlanningZone-PDF?bidId=
[5] An example of a 50-Mile Planning Zone Map can be found here: https://www.maricopa.gov/DocumentCenter/View/73177/PVGS_50Mile_PlanningZone_8x11_Landscape?bidId=

of alerting the public to an emergency. It is important to know what those alert devices sound like AND what they are alerting to. Again, situational awareness is for not without situational understanding, so do your homework.

Secondary forms of notification may include (but are not limited to) route alerting by law enforcement agencies, emergency alert via radio, television, and other media outlets; and (in some areas) alert via text message. Regardless, it is important to take these warnings seriously and follow the guidance of local authorities.

Sheltering During a Radiological Emergency

Sheltering in place may be recommended during a nuclear accident. Shelter in place means going indoors and remaining indoors until the emergency is over or a coordinated evacuation can be undertaken. Such action will reduce an individual's exposure to radiation resulting from a radioactive release.

When instructed by emergency officials to take shelter:

- Go indoors and close all windows and doors. Turn off fans and heating and air conditioning that require outside air, and close any and all air intakes and vents.
- Do not use telephones or cell phones unless it is absolutely necessary. Keep phone lines open for emergency communication.
- Cover all open food containers. The food, water, and milk supplies in the home are safe for consumption.
- Do not eat any produce from a vegetable garden until you are advised. In the event of a radioactive release, the produce may become contaminated
- Remain indoors until officially notified that the emergency is over, or evacuation has begun.
- Stay tuned to local EAS radio or television stations for emergency information.

For more information on sheltering in place, Concilium offers a free resource entitled: *Grab and Go: A Hibernation and Go-Bag Primer* (https://concilium.us/wp-content/uploads/2021/12/Bug-Out-Bags-and-Hibernation-Primer-2019.pdf). This document and others great resources can be found on Concilium's Resources Page: https://concilium.us/resources/.

Evacuation During a Radiological Emergency

What to Do

Evacuations will be ordered only if large amounts of radioactive materials are released into the atmosphere or expected to escape over a long period of time. Such action would most likely be ordered as a precaution. If emergency evacuation is required, instructions will undoubtedly be given by local authorities on radio and television stations. Mass evacuations, however, are anything but easy. Most often the best course of action is to beat the crowd before resources are depleted. It is in these times that desperation leads to pandemonium and secondary critical incidents (remember the final days of the US evacuation from Afghanistan). In these cases, more people may well be hurt by acting in unnecessary haste than by actual radiation.

Where to Go

While authorities will certainly designate Evacuation Assembly Centers (EAC) or other facilities offering the greatest level of public safety to receive evacuees, it is highly recommended that faith-based workers and their organizations pre-designate evacuation points in their contingency planning. The likelihood of losing contact with field personnel during evacuation movements is real. Thus, contingency planning that pre-designates evacuation locations as well as timing for reaching those areas in critical to forecasting next steps in a crisis.

Once an evacuation begins, monitor local and international news for updates as well as your local embassy or other key government resources for any changes while on the road. Adhere to the speed limits on the highways. Additionally:

- When evacuating, keep car windows and vents closed and air conditioners turned off until the 50-mile EPZ limit is reached.
- Proceed directly to designated relocation points or assembly centers.

Evacuation Checklist

- Take clothing, toiletry articles, necessary medications, KN95 masks, important papers, and valuables (money, credit cards, jewelry, etc.). Individuals and families may also have use for other supplies such as sleeping bags, a portable radio, flashlight, and batteries.
- Keep phone lines open for emergency use. Remember that even when voice cell towers are jammed with voice calls, text messages and data often work.
- Before leaving home, shut off water, gas, lights and appliances.

Once Personnel Have Been Notified for Evacuation:

Depending on the location and context, personnel should place an obvious sign/notice that says, "We have been notified," in their window or door facing the street or road when they leave their apartment or office. As an alternative, tie a towel to the door. This tells emergency workers going door-to-door that people in the area know about the emergency.

Radiation Treatment

Potassium Iodide (KI) Guidelines[6]

The effectiveness of KI as a specific blocker of thyroid radioiodine uptake is well established. When administered in the recommended dose, KI is effective in reducing the risk of thyroid cancer in individuals or populations at risk for inhalation or ingestion of radioiodines. KI floods the thyroid with non-radioactive iodine and prevents the uptake of the radioactive molecules, which are subsequently excreted in the urine.

Threshold Thyroid Radioactive Exposures and Recommended Doses of KI for Different Risk Groups[7]

	Predicted Thyroid gland exposure (cGy)	KI dose (mg)	Number or fraction of 130 mg tablets	Number or fraction of 65 mg tablets	Milliliters (mL) of oral solution, 65 mg/mL***
Adults over 40 years	≥ 500	130	1	2	2 mL
Adults over 18 through 40 years	≥ 10	130	1	2	2 mL
Pregnant or Lactating Women	≥ 5	130	1	2	2 mL
Adolescents, 12 through 18 years*	≥ 5	65	½	1	1 mL
Children over 3 years through 12 years	≥ 5	65	½	1	1 mL
Children 1 month through 3 years	≥ 5	32	Use KI oral solution**	½	0.5 mL
Infants birth through 1 month	≥ 5	16	Use KI oral solution**	Use KI oral solution**	0.25 mL

*Adolescents approaching adult size (≥ 150 lbs.) should receive the full adult dose (130 mg).

**Potassium iodide oral solution is supplied in 1 oz (30 mL) bottles with a dropper marked for 1, 0.5, and 0.25-mL dosing. Each mL contains 65 mg potassium iodide.

***See the *Home Preparation Procedure for Emergency Administration of Potassium Iodide Tablets to Infants and Small Children*.

[6] Information gathered from the US Food and Drug Administration: https://www.fda.gov/drugs/bioterrorism-and-drug-preparedness/frequently-asked-questions-potassium-iodide-ki. It is highly recommended that you talk with your doctor prior to an emergency about the use of potassium iodide for you or your children.
[7] Source: FDA Document: *Guidance: Potassium Iodide as a Thyroid Blocking Agent in Radiation Emergencies*. https://www.fda.gov/media/72510/download

How long should potassium iodide (KI) be taken?

Since KI protects for approximately 24 hours, it should be dosed daily until the radiological risk no longer exists. Priority regarding evacuation and sheltering should be given to pregnant females and neonates because of the potential for KI to suppress thyroid function in the fetus and neonate. If additional protective measures are available, it is not recommended to repeat dosing in pregnant females and neonates.

Who should not take potassium iodide (KI) or have restricted use?

Persons with known iodine sensitivity should avoid KI, as should individuals with dermatitis herpetiformis and hypocomplementemic vasculitis, as well as extremely rare conditions associated with an increased risk of iodine hypersensitivity. A seafood or shellfish allergy does not necessarily mean that you are allergic or hypersensitive to iodine. People with nodular thyroid with heart disease should not take KI. Individuals with multinodular goiter, Graves' disease, and autoimmune thyroiditis should be treated with caution -- especially if dosing extends beyond a few days. Personnel not sure if they should take KI should contact their healthcare professional.

When should personnel take potassium iodide (KI)?

KI works best if used within 3-4 hours of exposure. Although the FDA has not made specific recommendations for individual purchase or use of KI, the Nuclear Regulatory Commission has contracted to purchase KI for states with nuclear reactors and states that have population within the 10-mile emergency planning zone. Those on the outside of these zones will need to seek alternative means for KI.

Inventory: Supplies, Resources, and Planning

In the event of a nuclear emergency, having resources and supplies on hand BEFORE an emergency is critical to health, safety, and survival. Apart from a traditional shelter in place or hibernation inventory[8], the following additional supplies and resources are recommended for sheltering in place and for evacuating in the event of a nuclear emergency.

RADIATION SAFETY IN SHELTER RESOURCES

The links below offer excellent resources for a radiological incident.

Shelter-in-Place for Nuclear/Radiological Get In. Stay In. Tune In.
https://www.fema.gov/sites/default/files/documents/fema_shelter-in-place_guidance-nuclear.pdf

Shelter-in-Place in A Radiation Emergency
https://www.cdc.gov/nceh/radiation/emergencies/pdf/shelter.pdf

Protective Action Guides and Planning Guidance for Radiological Incidents
https://www.nrc.gov/docs/ML2104/ML21042A536.pdf

[8] For Concilium's general recommendations for a shelter in place kit, please see page 3 of our Grab and Go document which can be downloaded at: https://concilium.us/wp-content/uploads/2021/12/Bug-Out-Bags-and-Hibernation-Primer-2019.pdf

KN95 Mask (Adult and Child)

KN95 masks are well known now because of COVID. Regardless of who manufactures the mask, make sure that it provides a good fit over your mouth and nose without any gaps along the edges of your face or around the nose. Presently Amazon has KN95 Masks on sale (as of September 2022).

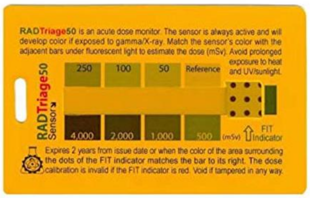
https://www.amazon.com/WWDOLL-KN95-Mask-5-Layers-Breathable/dp/B09DNTLDTG

Inspector Digital Geiger Counter

The Inspector is the most sensitive pocket Geiger counter available. The Inspector offers a digital readout instead of a traditional analog meter. The readout is displayed with a red count light and an audible beep that provides instant indications of the radiation level. This device has excellent sensitivity to low levels of Alpha, Beta, Gamma, and X-rays.

https://www.geigercounters.com/InspectorAlert/

SafeCastle RADTriage Model 50 Personal Dosimeter



During a radiation emergency, the RADTriage Model 50 is a useful dosimeter. Approximately the size of a business card, RADTriage fits in your pocket, wallet, or can be attached to your outer clothing with a string or other material.

The Model 50 is non-electrical, reliable, rugged, and useful for determining radiation exposure and whether medical treatment is required during a radiological incident such as a nuclear power plant accident.

https://www.amazon.com/Triage-Personal-Radiation-Detector-Wallet/dp/B00W48WLVC/ref=dp_prsubs_1?pd_rd_i=B00W48WLVC&psc=1

Plastic Sheeting (4-6 mil thickness) and Duct Tape

Adding plastic sheeting and duct tape to your shelter in place (SIP) kit allows you to seal off a building, room, or vehicle to make it as airtight as possible. These two resources can greatly increase your survivability against radiological exposure as well as exposure to chemical and biological agents.

Plastic sheeting allows you to cover and seal windows and doors and the tape creates an airtight seal as it attaches the sheet plastic to a window frame and/or a wall.

NOTE:
Neither Concilium Inc., nor Scott Brawner, receive compensation for any product recommendations made in this document.

How to Shelter in Place During a Nuclear Emergency

Being able to shelter in place quickly is the most important part of the entire plan. The good news is that a radiological event could take hours to see radioactive contaminates and particulates reaching your home, depending on distance from ground zero. The fundamental principle is to "get low." The safest place during a radiation emergency is a centrally located room or basement. This area should have as few windows as possible. The further your shelter is from windows, the safer you will be.[9] Other ideas for sheltering in place during a radiation emergency include:

- Close and lock all windows and doors.
- Shut off your HVAC system. Air from the outside could be contaminated.
- Cut plastic to cover your doors and windows in the room. Tape with duct tape to create airtight barriers.
- Cut plastic and tape over any vents inside the room.
- Prepare to evacuate.

Helpful Links

The following links are helpful tools and resources for understanding and preparing for a nuclear emergency (links are active as of September 2022). It is also recommended that you seek out guidance from authorities in the country that you are serving for their recommended best practices.

- IAEA International Nuclear and Radiological Event Scale
  https://www.iaea.org/resources/databases/international-nuclear-and-radiological-event-scale

- United States Nuclear Regulatory Commission Nuclear Emergency Guidance
  https://www.nrc.gov/about-nrc/emerg-preparedness/in-radiological-emerg.html

- Centers for Disease Control Guidance Document for Sheltering in Place
  https://www.cdc.gov/nceh/radiation/emergencies/pdf/shelter.pdf

- Ready.gov Guidance for Nuclear Powerplants
  https://www.ready.gov/nuclear-power-plants

- Virginia Department of Emergency Management Nuclear Safety Page
  https://www.vaemergency.gov/threats/nuclear-safety/

- Dominion Energy Safety and Emergency Preparedness Guide
  https://cdn-dominionenergy-prd-001.azureedge.net/-/media/pdfs/global/nuclear/surry-power-station/safety-and-emergency-preparedness-guide.pdf?la=en&rev=c82e5f507807418d8106ab8425bec42a&hash=F932EE916D314D05557A63370A5564B7

[9] This section of information was drawn from the Center for Disease Control and Prevention's shelter in place guidance found at: https://www.cdc.gov/nceh/radiation/emergencies/pdf/shelter.pdf

Conclusion

Counting the cost of risk on the mission field is critical to mission and ministry success. Being prepared for what could happen as we serve the Lord is part of stewarding well all that God has provided for our faithful service to Him.

While it is my prayer that we NEVER have to implement a nuclear emergency plan, being prepared for such a crisis through thorough contingency planning is a practice in good stewardship as we count the cost of obedience to God's call to go and to serve.

It is my hope that this document helps you steward well all that the Lord has provided; for God's glory and the good of those we serve on the mission field.

If you have any questions about this document or other questions about contingency planning, crisis management, or security in the context of ministry, please contact Concilium at info@concilium.us.

In Christ,
Scott Brawner

About the Author

Concilium Board and Staff President, Scott Brawner has led Concilium since it was founded in 2013.

Scott accepted Jesus as his personal Savior in January of 1987 and served in the United States Army with the First Ranger Battalion in Operation Desert Storm.

Scott was called to Gospel ministry on active duty and is a licensed and ordained pastor. Scott holds a bachelor's degree in history and a master's degree in Christian Education.

Scott has worked in mission sending and security endeavors for more than 20 years, including 7 years as Director of Risk Management for the International Mission Board (IMB), and Co-founder and Executive Director of the Risk Management Network, and founding co-chair for the Faith Based Organizations Working Group at the Overseas Security Advisory Council (OSAC).

Professional affiliations include Overseas Security Advisory Council (OSAC), Risk Management Network, American Legion, US Army Ranger Association, NGO Security Network, and the International NGO Safety and Security Association (INSSA).

Scott lives in the USA with his wife and three children.