

NukAlert™ Operating Manual

What is the NukAlert™ and What does it do?

The NukAlert™ is a calibrated radiation meter that alarms when exposed to dangerous levels of nuclear radiation. It does not respond to relatively safe, low level radiation. Its primary utility is to aid in the location and evaluation of shelter during a radiation emergency. It may also be used to verify the reduction of radiation during evacuation. The NukAlert™ indicates radiation exposure by producing groups of audible alarm chirps about twice per minute. The number of chirps per group is easily counted. The approximate radiation intensity is indicated by the number of chirps produced per group. The lowest indicated level of radiation (0.1 Roentgen per hour) will cause a single chirp every 35 seconds. With each doubling of the radiation intensity an additional chirp is added to each alarm chirp group. At 0.2 R/hr the unit will double chirp every 30 seconds. At 0.4 R/hr it will chirp three times in a row, repeating every 25 seconds, etc. ♦ At the highest level (above 50 R/hr) the alarm will change to an uninterrupted series of siren-like sounds that become shorter and more frequent if the exposure rate continues to increase. ♦

What ♦ is a ♦ Roentgen?

A Roentgen (R) is an amount of radiation. ♦ It is about 1% of the amount that is the threshold for radiation sickness. ♦ In other words, ♦ if a healthy adult does not exceed a **dose** of 100 Roentgens received in a short time (days) they are unlikely to experience radiation sickness, which is 100% survivable, if not exceeded. ♦ *"Very few of those receiving acute doses (received within 24 hours) of less than 100 R would become sick, even briefly."* [NWSS](#) While govt agencies advise to try to limit your normal exposure to 5 rad per year and 25 rad for lifetime and emergency workers to 50 rad. [10 11](#) (Lower limits for children & fetuses.) in a widespread nuclear emergency staying under 100 rads for healthy adults is survivable and does not require aggressive medical attention.

Receiving more than 500 R within a few days is more likely to be fatal, even with aggressive medical treatment. The **dose rate** at which the dose is received is expressed as Roentgens per hour (R/hr). Think of the dose as miles and the dose rate as miles per hour. The chart on the back of the NukAlert™ shows the radiation dose rate associated with each number of alarm chirps per group. The far right column shows the amount of time (d-days, h-hours) that one could receive the given dose rate before a dose of 100 R was accumulated.

# OF CHIRPS	R/hr	TIME TO 100R EXP
1	0.1	41.6 d
2	0.2	20.8 d
3	0.4	10.4 d
4	0.8	5.2 d
5	1.6	2.6 d
6	3.2	1.3 d
7	6.4	15.6 h
8	12.8	7.8 h
9	25.6	3.9 h
10	50+	< 2.0 h

So, if the NukAlert™ is alarming at the 6 chirp level (3.2 R/hr) and you stay in that same radiation field for a total of 1 hour, you will have accumulated a dose of 3.2 R. The key thing to remember is that *When you are exposed to radiation, your body absorbs a dose of radiation.* And, that the radiation dose is cumulative! So, if you are exposed to a radiation field of 3.2 R/hr, and remain there for ten hours you will accumulate a radiation dose of 32 R (3.2 R/hr X 10 hours). Same as if you were driving at 3.2 mph, you'd be (accumulated) 32 miles ten hours later. At 3.2 R/hr you'd have about 31 hours to evacuate or find better shelter before exceeding that adult 100 rad dose limit.

The hope here is that if there is some radiation around in a widespread nuclear event the inexperienced user will more readily see that it's not always fatal and panic and, instead, diligently focus then on seeking out the best shelter, or location to evacuate to, to keep their exposure and cumulative dose As Low As Reasonably Achievable.

In any future nuclear emergency, there will likely also be many people, both near and far, that are not in harms way, but won't know it without any radiation detection instruments, like a NukAlert™. They will worry needlessly or, possibly, even panic. Others, who should promptly get to a safer area, won't know to do so either, or if they do go someplace else, won't be able to confirm that it is indeed safer, without radiation detection instruments. The key to assuring your family is safe, or have gotten safer, or even if any should later seek medical attention, or not, is only possible if you have your own radiation detection instruments, with you, right then. With them in-hand, in a for-real future nuclear emergency, it's like being the only one then with a flashlight in a blackout to promptly, and confidently, lead the safest way out!

What should I do if my NukAlert™ starts chirping?

Don't Panic!!! When any radiation detector alarms, you must evaluate the situation. If the NukAlert™ is producing single or even double chirps about twice per minute, consider the possibility that it is caused by a sudden extreme temperature increase *if so, it will stop within a few minutes.* Even consider the possibility that the instrument has been damaged (case seal broken). It is possible, but very unlikely that your NukAlert™ will encounter significant radiation without some obvious cause. A hidden radiation source or unexploded *dirty bomb* strong enough to activate the NukAlert™ will be very localized. Moving a few feet or yards should cause a change in the level of the alarm. Direct exposure of the NukAlert™ to the brief but very intense beam of medical x-ray equipment will cause a substantial response that requires a few minutes for recovery. If the

NukAlert™ is alarming due to a dirty bomb or nuclear explosion, you won't have to wonder about the cause!! **Still - Don't Panic!!!**

If you are confronted with a dirty bomb attack, as long as you avoid breathing in the dust, the radiation will not be instantly life threatening, and your NukAlert™ will be telling you that. You should move away from the blast area as quickly as possible. If the wind is blowing toward you from the direction of the blast, travel in a direction that is crosswise or perpendicular to the wind as you move away from the blast area. If possible cover your face with a dust mask or cloth to avoid inhaling potentially radioactive dust. Upon reaching a safe location, remove your outer clothing outside and shower as soon as possible. Refer to local news sources for additional instructions about sheltering or evacuation. With public communication and infrastructure intact, the government is well equipped to direct the response to a dirty bomb attack and their advice should be generally heeded.

A dirty bomb, unlike a nuclear weapon detonation or power plant reactor meltdown, cannot produce radioactive Iodine, so if you are certain the event was a dirty bomb, there is no need to take Potassium Iodide (KI). In the event of a nuclear power plant accident, the authorities are likely to have good information and a sensible plan take their advice seriously and use your own common sense.

What if there is a terrorist or military nuclear weapon detonation?

A nuclear detonation presents a much more difficult scenario. The infrastructure and public communication may be totally disrupted leaving you completely on your own. **Don't Panic!!!** Even if the NukAlert™ is chirping wildly, you must evaluate the situation. In a week or two, people will be rebuilding their lives. Determine to survive and be among them! The zone of total destruction of a nuclear blast is limited to a few miles or even just a few blocks depending on the power of the weapon. If you are outside of that zone, your chances of surviving to live a long healthy life are quite good. If you know what to do!

Your first indication of an attack may be a bright flash of light. If you are within several miles of the detonation, a blast and brief tornado-like winds will arrive within a few seconds, to a maximum of a minute or so, after the flash. This is the time to **Duck and Cover**. Don't look at the flash it could blind you! Drop flat to the ground or behind any shelter that can be taken instantly. Cover any exposed areas with anything that can limit burns from the intense light, or injury from flying debris. Stay covered for two minutes. Count the number of seconds from the flash to the blast wave arrival. If the blast does not arrive within two minutes, it will be considerably weakened when it does. If your NukAlert™ begins chirping within 30 seconds after the flash, it means that you have received some of the primary radiation from the detonation it does not necessarily mean you will get radiation sickness only that you will need to be extra careful about further radiation exposure from the fallout because you have already absorbed some unknown dose.

After waiting two minutes for the blast, get up and find shelter immediately from the coming fallout. This is the time to think about, look for, and work with other people. Your knowledge and NukAlert™ can be employed to save the lives and health of many people. The number of seconds between the flash and the blast wave arrival divided by 5 gives a rough idea of your distance in miles from ground zero. If you were within a few miles, radioactive fallout will begin within a few minutes. Much further

away (20 ♦ 200 miles) it may arrive over a period of hours. As long as you keep the fallout dust off of you, keep from inhaling or ingesting it, and put enough material (mass) between you and the dust to absorb the radiation it is giving off, you will be safe. The air does not become radioactive, only the dust and debris that falls after being thrown miles into the air by the explosion. The intensity of the radiation given off by the dust decreases (decays) rapidly. Within 7 hours it will be one tenth of what it was in the first hour. After two days it will be one hundredth as intense. After two weeks, it will be one thousandth of its initial intensity.

Sheltering from the fallout radiation for a few days can easily preserve life and health. The ideal fallout shelter would have at least a couple of feet of soil above and on all sides. However, any shelter, even improvised, is better than none. Hunkering down for a few days in the corner of a basement can mean the difference between life and death! The best time to evaluate shelter is before it is needed. Identify potential shelters in your home, work or school. Stock these places with at least bottled water and provisions for shelter improvement. To learn more about setting up an improvised and provisioned fallout shelter, read:

[WHAT TO DO IF A NUCLEAR DISASTER IS IMMINENT!](#)

How do I know if my NukAlert™ is working properly?

Your NukAlert™ requires no maintenance, adjustments, connections, or battery replacement. It is always "on". The battery sealed inside will power the instrument for over ten years at room temperature, or somewhat less if kept at elevated temperatures. If the unit gets wet, simply dry it off ♦ it is completely sealed. Even if water gets into the sound hole, it can♦t get past the diaphragm into the unit. The NukAlert™ produces a faint ticking sound to indicate normal operation. Place the sound hole of the device near your ear and listen for somewhat regular ticks about twice per second or double ticks every few seconds. Either of these ticking patterns indicates a functioning unit. If your unit is not ticking as described, or is continuously alarming in the absence of radiation, please contact us for a replacement. The device may be tested by exposing it to x-rays (at a dentist♦s office). A single chirp alarm pattern can also be heard by subjecting the device to a sudden extreme temperature increase (freezer to warm room). DO NOT test the instrument by □nuking□ it in a microwave. Microwaves are not nuclear radiation - your unit will be instantly destroyed and the warranty voided.

Information on NukAlert™ warranty, battery replacement program and detailed technical brief can be found at www.NukAlert.com