

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 0.2R/hr the unit will double chirp every 30 seconds. At 0.4R/hr it will chirp three times in a row, repeating every 25 seconds, etc. At the highest level (above 50R/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 acute radiation sickness. Government agencies advise limiting exposure to 5R per year and 25R for lifetime (lower limits for children & fetuses), and to 50R for emergency workers, but in a widespread nuclear emergency, staying under 100R for healthy adults is survivable and does not require aggressive medical attention.

Receiving more than 500R within a few days is more likely to be fatal, even with aggressive medical treatment.

The rate at which a radiation dose is received is expressed as Roentgens per hour (R/hr) and is called the dose rate. 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 100R 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 (3.2R/hr) and you stay in that same radiation field for a total of 1 hour, you will have accumulated a dose of 3.2R. The key thing to remember is that when you are exposed to radiation your body absorbs a dose of radiation, and that radiation dose is cumulative! So, if you are exposed to a radiation field of 3.2R/hr and remain there for ten hours, you will accumulate a radiation dose of 32R (3.2R/hr X 10 hours = 32R). It's as if you were driving at 3.2 mph, and after ten hours you will have moved (accumulated) 32 miles. At 3.2R/hr you would have about 31 hours to evacuate or find better shelter before exceeding a 100R dose.

What should I do if my NukAlert™ starts chirping?

Dont 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. At the lowerest alarm levels the NukAlert™ responds rather slowly and needs a few minutes to settle at a final reading. At the higher alarm levels the response is immediate. 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 - **Dont Panic!!!**

What about Dirty Bombs?

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 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. **Dont Panic!!!** Even if the NukAlert™ is chirping wildly, you must evaluate the situation. In a few weeks 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 are 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!](http://www.ki4u.com/guide.htm)

<http://www.ki4u.com/guide.htm>

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 may 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.

NOTE:

As the NukAlert™ calibration accuracy is specified to be plus or minus one chirp level, and an exposure may be just below the level required to add another chirp to the indication, it is prudent to assume that the actual radiation level may be four times higher than the device is indicating. Always seek to minimise radiation exposure whenever possible.

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