

Instruction Manual

TROX^ALER_TTM

Radiation Survey Meter



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PN 104260
October 2001
Edition 7.0

INTRODUCTION

The TroxAlert™ Radiation Survey Meter provides an inexpensive means of fulfilling the survey requirements of an ALARA (*As Low As Reasonably Achievable*) program. The TroxAlert is a basic tool that can be used to survey storage areas and work sites to ensure a safe working environment.

The TroxAlert uses a Geiger-Mueller (G-M) tube to detect alpha, beta, gamma, and x-ray radiation. The measured radiation is shown on the scale and on the LED on the front of the case. The TroxAlert also beeps when radiation is detected.

NOTE

TroxAlert reactions to natural background radiation are normal and expected.

The TroxAlert has two switches: the **ON-OFF-BATT** rocker switch on the left-hand side of the case and the 3-position range switch on the front of the case.

The range switch is used to set the measurement range of the TroxAlert. With the switch in the **X1** position, the scale measures from 0 to 1 mrem per hour (0-10 $\mu\text{Sv/h}$). In the **X10** position, multiply all readings by 10 [0 to 10 mrem/h (0-100 $\mu\text{Sv/h}$)]. In the **X100** position, multiply all readings by 100 [0 to 100 mrem/h (0-1000 $\mu\text{Sv/h}$)].

CHECKING THE TROXALERT

The TroxAlert is powered by a 9-volt alkaline battery. The battery life is about 2,000 hours under normal operating conditions.

Always test the battery before using the TroxAlert. To test the battery, press and hold the top half of the **ON-OFF-BATT** switch. When the switch is pressed, the meter needle should move into the *BATT* range on the right of the display. If the needle does not move into this range, then replace the battery. To access the battery, turn the meter over. Slide the cover on the bottom of the meter off.

To check the TroxAlert, use any nuclear surface gauge as a check source. After checking the battery voltage as described above, turn the meter power on and set the range switch to the **X10** position (change the range as needed). Hold the meter about 1 foot (0.3 m) away from the gauge and point the meter at the gauge. Slowly bring the meter closer to where the source rod meets the gauge top shell. The meter reading [mrem/h ($\mu\text{Sv/h}$)] should increase as you approach the gauge. If the needle does not deflect and there are no changes in the alarm, then the TroxAlert is not working properly.

In case of an accident that involves a nuclear gauge, notify your Radiation Safety Officer (RSO) as soon as practical. If the only available gauge is damaged, then check the TroxAlert battery. If needed, replace the battery. Assume the TroxAlert is working properly. Use the TroxAlert to locate the source. If you cannot locate the source, *immediately* contact your RSO, the licensing agency, and the gauge manufacturer.

USING THE TROXALERT

After checking the battery and, if needed, the TroxAlert, the user is ready to take a measurement. Start with the range switch in the **X100** position. Point the TroxAlert toward the suspected radiation source. Lower the range until the meter detects radiation or until the switch reaches the **X1** position.

CAUTION

Do not allow the TroxAlert to come in contact with a radioactive source. Such contact may contaminate the TroxAlert and render it useless.

In case of TroxAlert contamination, dispose of it properly. Failure to do so is illegal and dangerous. **DO NOT ship a contaminated TroxAlert to Troxler under any circumstances.** Please call the Troxler Service Department or Radiation Safety Department at (919) 549-8661 for instructions.

CALIBRATION

The TroxAlert responds to alpha, beta, gamma, and x-ray radiation (gamma and x-ray at a minimum energy level of 40 keV).

Two points on each of the three meter ranges are verified at the factory by placing the TroxAlert in a field of known radiation.

A cesium-137 (Cs-137) gamma source that is traceable to the U.S. National Institute of Standards and Technology (NIST) is used for this calibration. The accuracy of any single reading based on this calibration is $\pm 20\%$.

Note that environmental conditions and user technique affect the accuracy of the TroxAlert reading.

The TroxAlert should be re-calibrated at least once every year or as required by the user's license to insure readings within the stated accuracy range.

For additional information regarding re-calibration procedures, contact the Troxler Radiation Safety Department at (919) 549-8661.

SPECIFICATIONS

MEASUREMENT SPECIFICATIONS

Detector Geiger-Mueller tube, halogen quenched

Window Thickness 1.5 – 2.0 mg/cm²

Detectable Radiation Alpha, beta, gamma, and x-ray

Display Range 0 – 1 mrem/h (0 – 10 µSv/h)
0 – 10 mrem/h (0 – 100 µSv/h)
0 – 100 mrem/h (0 – 1000 µSv/h)

Accuracy ± 20% of indicated reading,
Cs-137 gamma

Calibration Two points per range using Cs-137 gamma source traceable to the U.S. National Institute of Standards and Technology (NIST), Washington, DC.

ELECTRICAL SPECIFICATIONS

Power Requirement	9V alkaline battery (NEDA 1604A; included)
Battery Life	Up to 2000 hr (normal operational conditions)

MECHANICAL SPECIFICATIONS

Case Size	5.75 L x 3.25 W x 1.5 D in (14.6 L x 8.26 W x 3.8 D cm)
Weight	7.68 oz (0.22 kg) with battery 6.08 oz (0.17 kg) without battery
Temperature Range	68 to 122 °F (-20 to 50 °C)
Humidity	20 – 95% (non-condensing)