



Solutions are our Business

Corporate Headquarters  
201 Renovare Blvd.  
Oak Ridge, TN 37830

## RESPONSIVENESS, INTEGRITY, INNOVATION

Philotechnics is a radiological services company that implements creative and innovative solutions for Naturally Occurring Radioactive Materials/Technologically-Enhanced Naturally Occurring Radioactive Materials (**NORM/TENORM**) for the Oil and Gas Industry.

## CUSTOMER FOCUS, PEACE OF MIND, CERTAINTY

Philotechnics partners with our clients by implementing best management practices for NORM/TENORM needs. We facilitate up-front regulatory buy-in and ensure compliance with the emerging, evolving and ever-changing regulatory requirements for NORM/TENORM with program development.

## SOLUTIONS ARE OUR BUSINESS

The Oil and Gas Industry faces Increasing Oversight of NORM/TENORM in Operations.

- ◆ Worker Health and Safety and training
- ◆ Waste characterization, minimization, packaging
- ◆ Waste Profiles, Acceptance Criteria and Disposal
- ◆ Public Health and Environmental Protection

We provide **Comprehensive Solutions** for **NORM/TENORM**

- ◆ Guidance for Radiation Dose Limits and ALARA
- ◆ Radiological Hygiene during field operations
- ◆ Contamination Control / decontamination
- ◆ Record Keeping / Document Control/ Regulatory Negotiation and Support
- ◆ Permitting / Licensing / Compliance

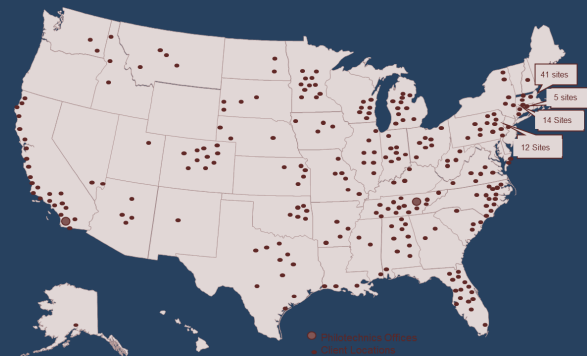
# Oil and Gas NORM and TENORM SOLUTIONS

Efficient program management, field execution and cost-effective outcomes for NORM/TENORM needs

## PHILO ADVANTAGES

- ◆ Cost Effective Approaches
- ◆ Multiple Radioactive Materials Licenses
- ◆ Hands on Radiological Support during field operations
- ◆ Pigs-to-go Services at our Licensed Radiological Facility
- ◆ Proven Solutions for all radiological waste streams
- ◆ Credibility with Regulators

## CLIENTS NATIONWIDE



**NORM/TENORM** is regulated under a myriad of state and federal regulations that address concerns such as environmental protection to worker safety to waste disposal. Currently the regulatory framework is fragmentary, but individual states are adopting legal requirements that Oil and Gas companies must consider. Inconsistencies surrounding the regulations in various States create an ever-changing regulatory environment and a need to adopt a “Best Practices” approach to NORM/TENORM management.

We provide program assessments to evaluate the potential hazards of each Client’s Operations. For some Operators, there are many NORM/TENORM issues that need to be addressed such as:

- ◆ Potential worker or public radiation exposure
- ◆ Environmental contamination
- ◆ Components/systems with NORM/TENORM contamination
- ◆ One program per facility, one program across multiple facilities and states or a “Best Practice Approach.”
- ◆ Waste disposal and activity concentrations – landfill facilities upgrading to radiation detection equipment and portal monitors that can detect NORM/TENORM

## CONTACTS

### HAZARDOUS / RADIOACTIVE WASTE MANAGEMENT

**MEGHAN TURVEY**

VICE PRESIDENT

MGTURVEY@PHILOTECHNICS.COM

865-285-3064

### RADIOLOGICAL SERVICES

**KEN GAVLIK**

VICE PRESIDENT

KEGAVLIK@PHILOTECHNICS.COM

865-816-8495

**ISSUE:** Operators need guidance toward Best Practices for radiological material management and radiological health safety.

**FIELD STUDY:** Data gathered by Philotechnics at natural gas pipeline sites demonstrates that Lead-210 (Pb-210)/Polonium 210 (Po-210) can easily build up in excess of release limits and require trained personnel for handling Pipeline Inspection Gauges (“PIGs” and “Pigging”).

**SOLUTION:** Philotechnics has developed systems for operational support during Pigging activities by providing onsite radiological support during pig removal and decontamination activities, “real time” assessment of the NORM activity and contamination control/exposure control consistent with the radiological hazard(s) present. The Philotechnics system demonstrates a NORM/TENORM compliance posture for the Client that its operations are consistently under a programmatic approach.

**ISSUE:** TENORM in natural gas pipelines. Radon decay products may collect in pipes, valves or pumps.

**FIELD STUDY:** Data collected by Philotechnics at pipeline locations, indicate elevated levels varying from 100s to over 50,000 cpm, equal to 2,500,000 dpm/100 cm<sup>2</sup>. In most states, this is at least 500 times the allowable surface contamination limit for unrestricted release.

**SOLUTION:** Philotechnics provides consultation with Client to develop work plans and procedures for radiological safety during operations e.g., the venting system, opening the trap, removing the pig and cleaning of the pig to ensure that radiological practices are in place. Recognizing the potential hazards associated and regulatory-level concern decreases Client’s risks when taking into account personnel exposure.