

Isotopes Canada tracers are a cost-effective service for formation evaluation during drilling operations for conventional and unconventional plays, groundwater, or cavern assessments.

Our tracers are added to the drilling fluid and are used to determine formation properties. Knowing the tracer concentration in the drilling fluid invasion allows for improved analysis of mud samples and extracted core in order to back out the formation properties. Accurate in-situ fluid saturations are needed to define the size of the prize and the resource value.

In providing a quick and efficient method for formation evaluation, the use of our tracer formulations during drilling results in better development planning, production forecasting, and reserves estimation. This applies to hydrocarbon reservoirs, groundwater, and other resource plays. Our exclusive Isotopes Canada tracers are unaffected by the chemical environment, formation temperatures or pressures.

## FAQ'S

### **How is the tracer injected?**

Added to the drilling fluid which results in tracer influenced mud invasion.

### **Is the tracer compatible with different drilling fluids?**

Yes, we have tracer formulations for water based and oil-based muds.

### **How is the formation evaluation data obtained?**

The tracer is measured from the fluid removed from the core.

### **How high of a tracer concentration is required?**

Typically, very low concentrations and low volume needed.

### **How are in-situ fluid saturations estimated?**

The core analysis extracts the invaded and in-situ fluids from the core – knowing the exact tracer concentration in the invaded fluid, backs out formation water saturation.

### **How are samples obtained for testing?**

The fluids extracted from the core during core analysis are sent to the Isotopes Canada laboratory for tracer detection analysis.

### **How large of a sample is needed for accurate analysis?**

Very small samples can be analyzed, even as small as 1mL.

### **Where are the samples processed?**

The laboratory analysis is conducted at our Calgary lab.

### **How many formulations do you have?**

We have a portfolio of many tracer formulations with ongoing work to expand our product line.

### **What is the timeline for completion of testing and providing results?**

From time of sample arrival to completion is approximately 5-7 business days.

## Solutions

Isotopes Canada tracers added during drilling provides an accurate determination of in-situ fluid saturations by measuring the degree of coring fluid invasion and backing out the in-situ water saturation.



The drilling fluid is “doped” with our tracer formulation and the concentration is measured in the mud and the invaded core to determine the degree of flushing. This type of analysis has been used for many decades in the oil and gas industry and is a proven method for precise, efficient, and cost-effective formation evaluation.

This data contributes to critical decision-making about:

- Drilling location planning
- Oil Saturation
- Reserves estimation
- Infill drilling optimization
- Resource development planning
- Production optimization
- Drilling fluid optimization

### Workflow

- Clients provide initial data for tracer program design.
- Program design and cost proposal prepared.
- Field execution plan is finalized.
- Administer tracer injection as per plan.
- Sample protocol executed.
- Samples sent by courier to Isotopes Canada, Calgary laboratory.
- Samples are evaluated and results sent to client.

### Previous Experience

- In business since 1981, completing over 500+ jobs with many repeat clients.
- Have conducted tracer programs for waterfloods for over 30 operators in Western Canada and internationally.
- Core tracing services for over 300 locations for exploration and production companies.
- Heavy Oil & Oilsands – Completed tracer programs for over 6 operators in the Cold Lake and Athabasca regions.

### HSE

- Isotopes Canada has a proven track record of safe and reliable services for almost 40 years.
- Our employees and contractors meet HSE industry training requirements
- We are committed to services that ensure the safety and health of our employees, contractors, clients, and other stakeholders.
- Isotopes Canada is compliant with the Canadian Nuclear Safety Commission for our in-house tracer formulations and maintains a rigorous audit process.
- At all levels of our organization, we commit to safe operations and protection of the environment.

