

Case Study: Hydrocarbon Remediation at Ferrocarril Mexicano

Location: Guadalajara, Mexico

Background:

Ferrocarril Mexicano, a major railway operator, identified **hydrocarbon contamination** at one of its rail sites in **Guadalajara, Mexico**. Ecolimpio, an environmental services company based in **Saltillo, Mexico**, was engaged to **assess and remediate** the contaminated soil within a designated **containment area**.

Upon initial **soil sampling and analysis**, **Total Petroleum Hydrocarbon (TPH) levels exceeded 50,000 ppm**, significantly surpassing acceptable environmental limits. Ecolimpio proposed the creation of a **bio-cell remediation site** to test the effectiveness of **X4JH2000** in accelerating the degradation of hydrocarbons.

Remediation Strategy:

To simulate a full-scale remediation project, the following steps were implemented:

1. Soil Sampling & Field Analysis:

- A contaminated **soil sample** was extracted and analyzed using Ecolimpio's **field laboratory** to establish a **baseline TPH level**.

2. Bio-Cell Creation & X4JH2000 Application:

- A **test area** was designated as a **bio-cell**, where X4JH2000—a synergistic chemical designed for hydrocarbon breakdown—was applied.
- The contaminated soil was **agitated and mixed into a slurry** to facilitate deeper penetration and degradation of hydrocarbons.
- To enhance the remediation process, **additional microbial cultures** were introduced to supplement the existing **indigenous bacteria**, ensuring faster hydrocarbon breakdown.

3. TPH Monitoring & Results:

- After the application of X4JH2000, Ecolimpio conducted **follow-up TPH testing** at **24-hour and 48-hour intervals**.
- The results demonstrated a **rapid and substantial reduction** in contamination:

Timeframe	TPH Level	Reduction
Baseline	>50,000 ppm	Initial contamination level
24 Hours	8,372 ppm	83% reduction
48 Hours	3,625 ppm	93% reduction

Conclusion:

- ✔ Achieved below 10,000 ppm TPH within 24 hours
- ✔ Exceeded 90% reduction target within 48 hours
- ✔ Final target of <1,000 ppm projected within 7–14 days
- ✔ Demonstrated the effectiveness of bio-cell remediation with X4JH2000

Ecolimpio's **innovative bio-cell approach**, coupled with **X4JH2000's advanced hydrocarbon breakdown technology**, successfully reduced contamination levels **faster than traditional remediation methods**. This case study highlights the **cost-effective, environmentally sustainable benefits** of **bioremediation-enhanced chemical treatment**, offering a scalable solution for railway and industrial contamination sites.