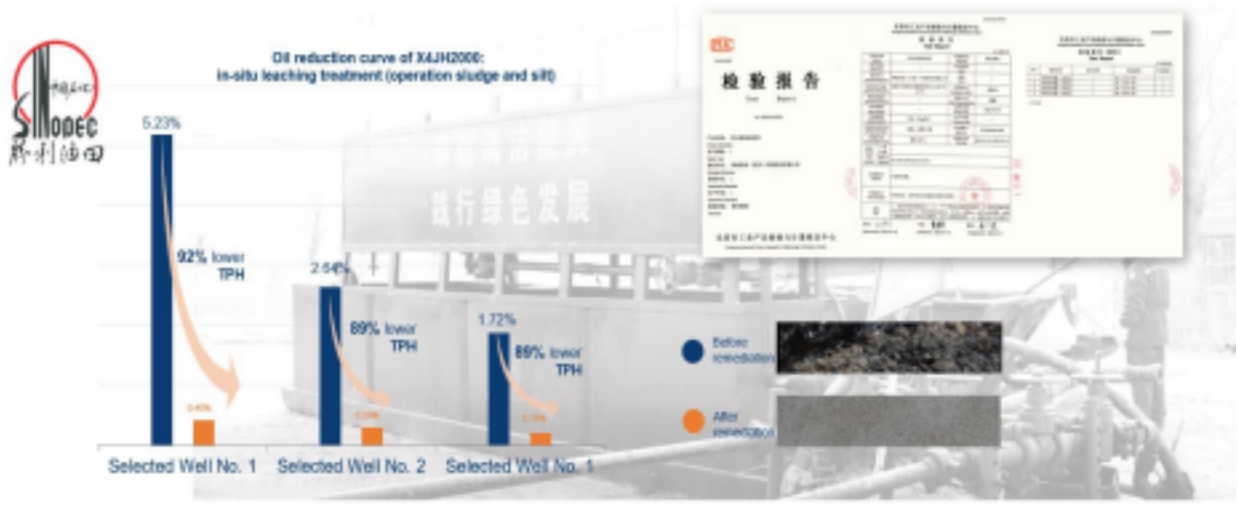
Report on the Use of X4JH2000 in Oil Reduction Methods(Shengli Oil Field)



Introduction

X4 Environmental specializes in advanced oil reduction and sludge remediation solutions. A key component in their technology is X4JH2000, a compound hydrocarbon-organic pollution remediation agent certified by the U.S. Environmental Protection Agency (EPA). This agent is an essential element in X4 Environmental's chemobiological combination method, significantly enhancing the efficiency of oil degradation and soil restoration.

X4JH2000: Composition and Properties

X4JH2000 is a non-toxic, water-soluble, and biodegradable chemical reagent designed for in situ treatment of hydrocarbon pollution. It consists of a specialized formulation that includes:

- **Hydrophilic head groups – which allow the agent to interact with water, aiding in the emulsification and dispersion of oil.**
- **Lipophilic tail groups – which attach to hydrocarbon molecules, breaking down oil contamination at a molecular level.**

This unique composition makes it highly effective in oil-contaminated soil remediation and sludge treatment while ensuring minimal environmental impact.

Application of X4JH2000 in Oil Reduction Methods

X4 Environmental's clients integrate X4JH2000 into their three primary product types, each offering a different approach to oil pollution control.

1. **Chemical Leaching and In-Situ Treatment**
    - **"Skid-mounted" equipment is used to rapidly extract oil through chemical leaching.**
    - **It enables the recovery of up to 80% of crude oil resources from contaminated**

soil and sludge.

- **In spray applications, X4JH2000 provides a low-cost and simple method to degrade oil in soil.**

2. Biochemical Remediation with Microbial Action

- **X4JH2000 works in combination with super microflora to accelerate the breakdown of petroleum hydrocarbons.**
- **This approach achieves 90% hydrocarbon reduction in approximately 45 days, making it ideal for large-scale contaminated soil treatment.**
- **The biochemical reaction enhances the microbial degradation of hydrocarbons, significantly reducing remediation time.**

3. Biological Oil Decomposition

- **X4JH2000 supports the microbial action that fully decomposes hydrocarbons into carbon dioxide and water.**
- **This process ensures environmentally friendly degradation at a lower operational cost.**

Effectiveness and Case Studies

X4JH2000 has been successfully implemented in several real-world scenarios, demonstrating its high efficiency:

- **United States, Louisiana: Treated oil-contaminated soil (5.6% TPH), reducing hydrocarbon content to 2.55% after 6 hours and 1% after 48 hours.**
- **United States, Texas: Emergency oil spill response; sludge pollution (7.8% TPH) was reduced to 0.735% within 7 hours.**
- **China, Tianjin: Applied in industrial sludge remediation, significantly improving oil reduction efficiency and shortening treatment cycles.**

Conclusion

X4JH2000 plays a crucial role in oil reduction methods by enhancing chemical leaching, boosting microbial degradation, and accelerating hydrocarbon breakdown. Its integration into chemical, biochemical, and biological remediation processes makes it a powerful and environmentally sustainable solution for treating oil-contaminated sites.

Use case: Tianjin, China.

Easy for operation: While oil reduction results are significantly improved, it ensures the simplicity of the treatment process and effectively controls the cost.

In-situ treatment of oil-contaminated soil

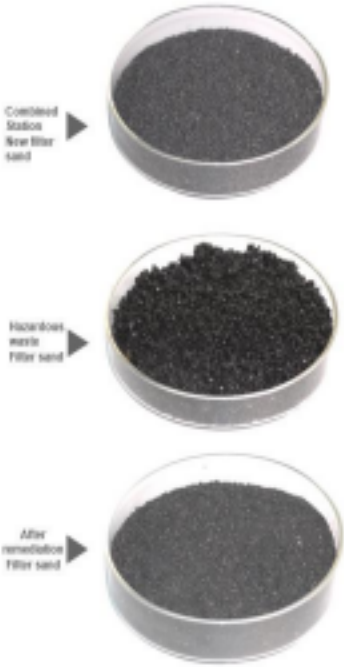
Efficient · Short cycle · Flexible and simple operation

1. Add wheat bran, sawdust, nutrients, etc. to the soil to be remediated in proportion and carry out paving evenly.
2. Spray X4JH2000 remediation agent and microbial inoculant, and carry out mixing evenly with a rotary tiller.
3. Regular turning (every 20 days or so).

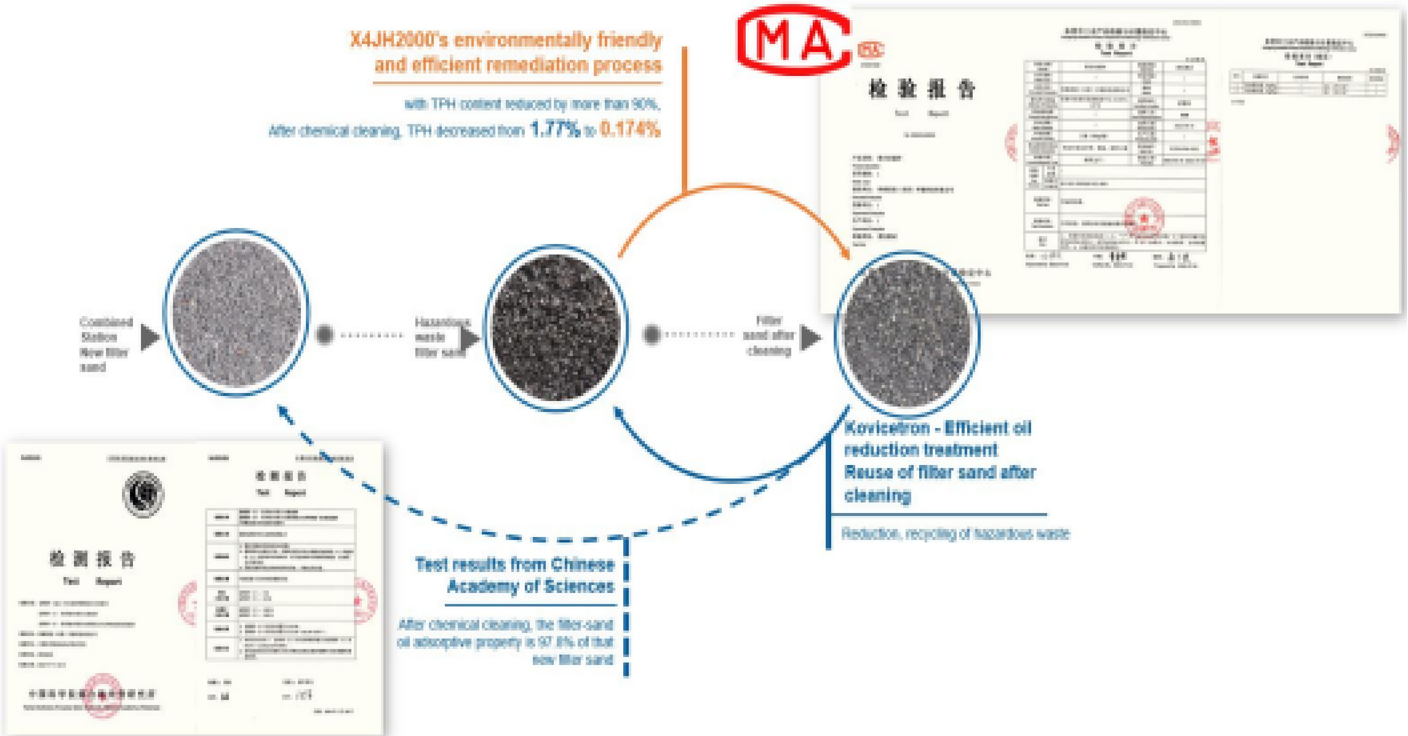
- X4JH2000 remediation agent
- TPH = 2%
- Poor native microflora

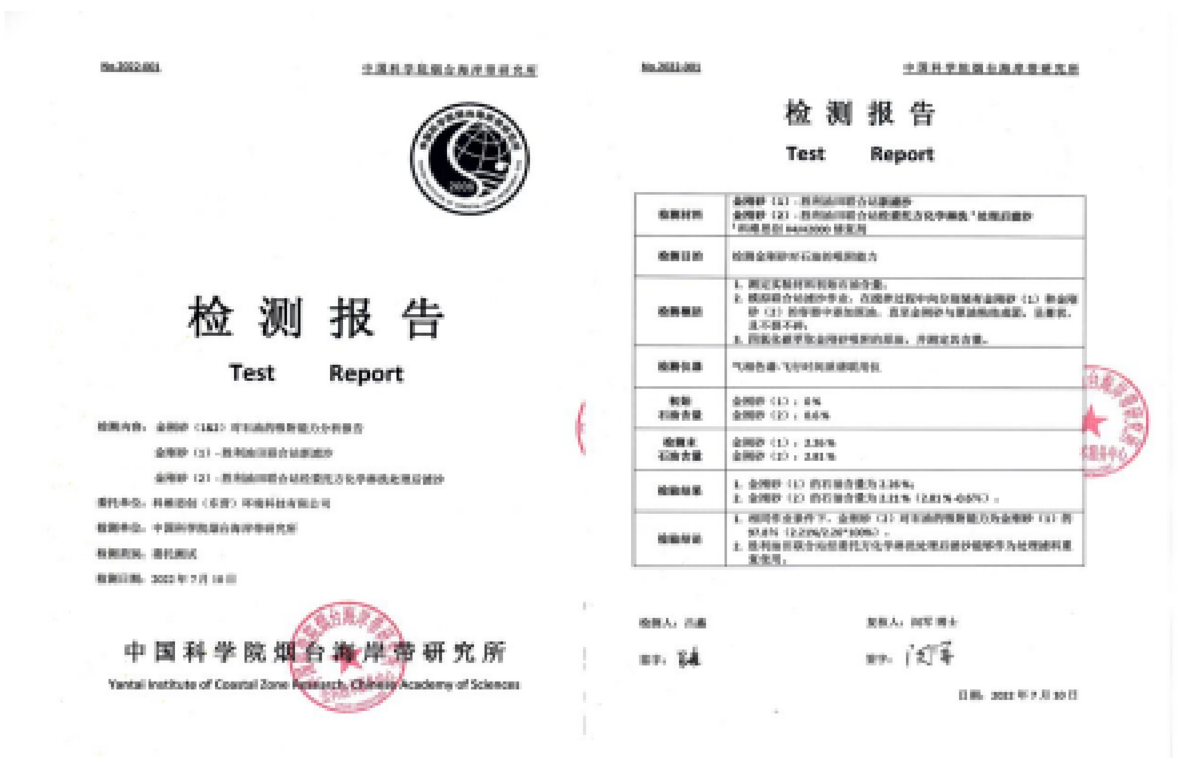
- Hand in hand with [Yantai Institute of Coastal Zone Research, Chinese Academy of Sciences]
- For product improvement, process optimization,

  With serving the society as guidance, for joint formulation and planning of scientific research projects, and working together for them
- Collaboration in implementation of scientific research projects, such as "Reuse of Hazardous Waste Filter Sand in Combined Stations"



- Continuous and efficient oil reduction, TPH reduced by more than 90%
- Guarantee of fullness of filter sand particle size after treatment
- Restoration to more than 95% of filter sand (oil adsorptive property)





中国科学院烟台海岸带研究所

检 测 报 告

Test Report

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检 测 报 告

Test Report

检 验 报 告

Test Report

No. [illegible]

产品名称： [illegible]

Product description

型号规格： /

Model Type

委托单位： [illegible]

Entrusted Enterprise

受检单位： /

Supervised Enterprise

生产单位： /

Supervised Enterprise

检验类别： [illegible]

Test Kind

东营市工业产品检验与计量检定中心

Dongying Industrial Product Inspection & Metrology Verification Center

东营市工业产品检验与计量检定中心

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检 验 报 告

Test Report

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样品制造商 Sample Manufacturer	/	送样人员	[illegible]
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Approved By [illegible] Verified By [illegible] Prepared By [illegible]

东营市工业产品检验与计量检定中心

Dongying Industrial Product Inspection & Metrology Verification Center

检验报告（续页）

Test Report

序号	检验项目	技术要求	检验结果	单项判定
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2	[illegible]	/	[illegible]	/

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