



Connecticut Department of Energy and Environmental Protection



In-situ Thermal Remediation Permitting in Connecticut June 13, 2012

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NEWMOA In-Situ Thermal
Remediation Workshop



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Statute

22a-423 Definitions:

“pollution” means harmful thermal effect or the contamination or rendering unclean or impure...

“harmful thermal effect” means any significant change in the temperature of any waters...

“rendering unclean or impure” means any alteration of the physical, chemical or biological properties of any of the waters of the state...



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Permitting Regulations

22a-430-3 General Conditions Applicable to Water Discharge Permits:

"Substance" means one or more elements, compounds or materials which, when added to water or wastewater, may alter the physical, chemical, biological or other characteristic of the water or wastewater. When used in this section and section 22a-430-4 of the Regulations of Connecticut State Agencies, the term substance includes heat, radiation, color and conventional pollutants.

22a-430-4 Procedures and Criteria for Issuing Water Discharge Permits



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Permitting

- Discharge to waters of the State requires a permit
- Issued for a specific activity at a specific location
- Fundamental enabling conclusions are necessary:
 - Activity does not pose a threat
 - Activity is necessary to protect the environment or is in the public interest
 - Activity is consistent with federal and state laws and regulations
 - Activity is consistent with CT Water Quality Standards



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Groundwater Discharge Permits

- **General Permit Registration**
 - Limited to certain types of remediation technology
 - Scalable review
 - Permit defines public involvement
- **Temporary Authorization** (as amended by P.A. 12-148)
 - 90 day life (whether consecutive, or not), no renewal
 - Focused technical review for DEEP to write technical requirements
 - no public involvement, may still require discussion with other government agencies
- **Individual Permit (UIC – State Permit)**
 - Most Flexible Timeframe/Use of Remediation Technologies
 - Full review
 - Full public engagement



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Technical Review - Basic Permit Questions

- Does applicant understand site conditions and pollution?
- Does applicant understand the remedial technology and its application to the site?
- Does applicant have an adequate plan of work, including provision for contingencies?
- Is there an adequate monitoring program to ensure permit compliance and human health/environmental protection?
- Have all stakeholders been considered and informed of activity?



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Other Review Considerations - Thermal

- Does the activity have potential to accomplish cleanup?
- Will activity cause a new environmental/safety problem?
- Will activity disrupt release/site unacceptably?
 - Preclude additional characterization for data gaps
 - Compound environmental problems
 - Halt desirable natural processes
- Is there understanding of the potential changes to the CSM due to the introduction of heat?



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Case Study Site Questions

- Is the remediation likely to work for the pollutants and their location within the hydrogeologic setting?
- Could any NAPL Mobilize?
 - How to Monitor? How Frequently? What to do if it does?
- Could flow direction change?
 - Mounding effect during heating? How will a change be dealt with? Would it even be an issue?
- Could vapors migrate onto other properties?
 - How would this be handled?
- What would happen during a power outage?
 - Would heat/vapors still be controlled?



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Case Study Site Questions Cont'd

- Would the heat sterilize the soil?
 - Would it be permanent?
- Could thermal breakdown products which are different than the normal breakdown products be produced?
- Will there be air monitoring?
- Could the temperatures endanger any subsurface plastic utility infrastructure?
- Will the current be isolated or can it leak from site?
- How will the site be secured?



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Case Study Site Questions Cont'd

- Will there be a thermal impact to the downgradient wetlands?
 - Will that have an effect on the remediation plans for the wetlands?
- What are the risks when sampling the heated groundwater?
- Monitoring Program
 - How long before hydrogeological conditions are restored so data can be used for compliance monitoring?
- Question that should have been asked
 - Will there be any noise/vibration issues involved with the remedial technology that has been chosen?



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Summary

- The Department accepts this technology and will work to help fit the use of In-Situ Thermal Remediation into our permitting structure
- Involve the Department in your plans early on in the process – will go smoother than if you just send in a permit application “cold”
- Likely will require the use of an Individual Permit (UIC, as in this case study), but a TA (as amended by P.A. 12-148) might work under some conditions (90 Day Activity Period)



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Permitting Questions?



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