

**ESAA Remediation Technologies  
Symposium 2002**

***Co-composting Treatment of  
Hydrocarbon Impaired Drilling  
Wastes***

***October 16 - 18, 2002***



**Newpark Environmental Services**

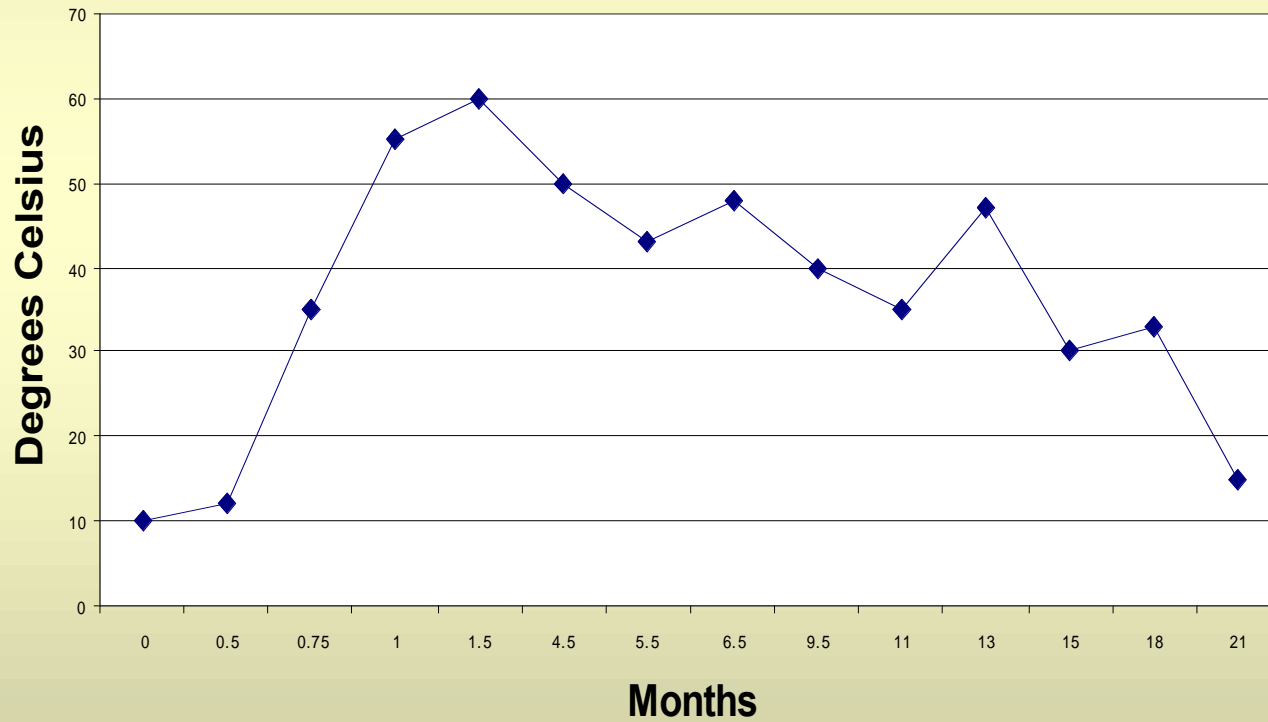
# Composting Definitions

- Composting is the process which controls decomposition of biodegradable organic waste by providing an optimal environment for microorganisms. By definition, composting systems are *self heating* and typically involve a *thermophilic phase*. (Generic)

# Typical Compost Windrow



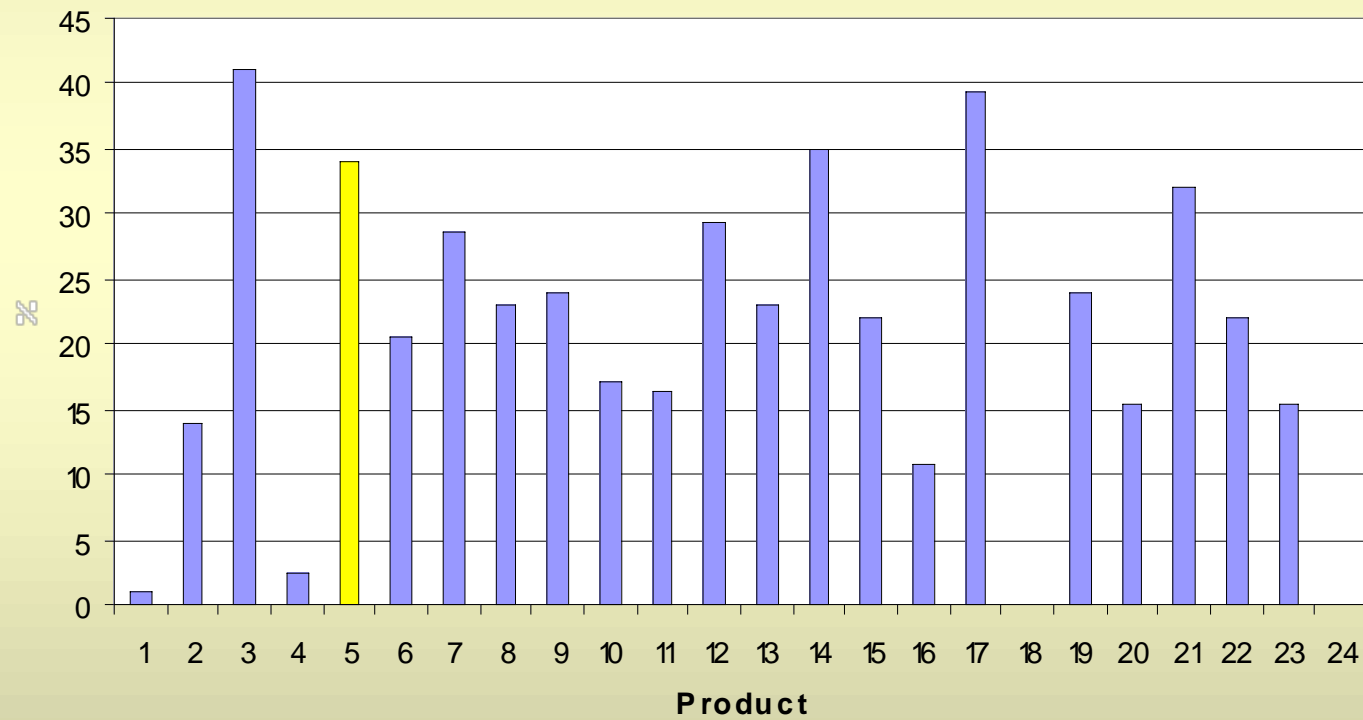
# Compost Temperature Profile



# Compost Turning



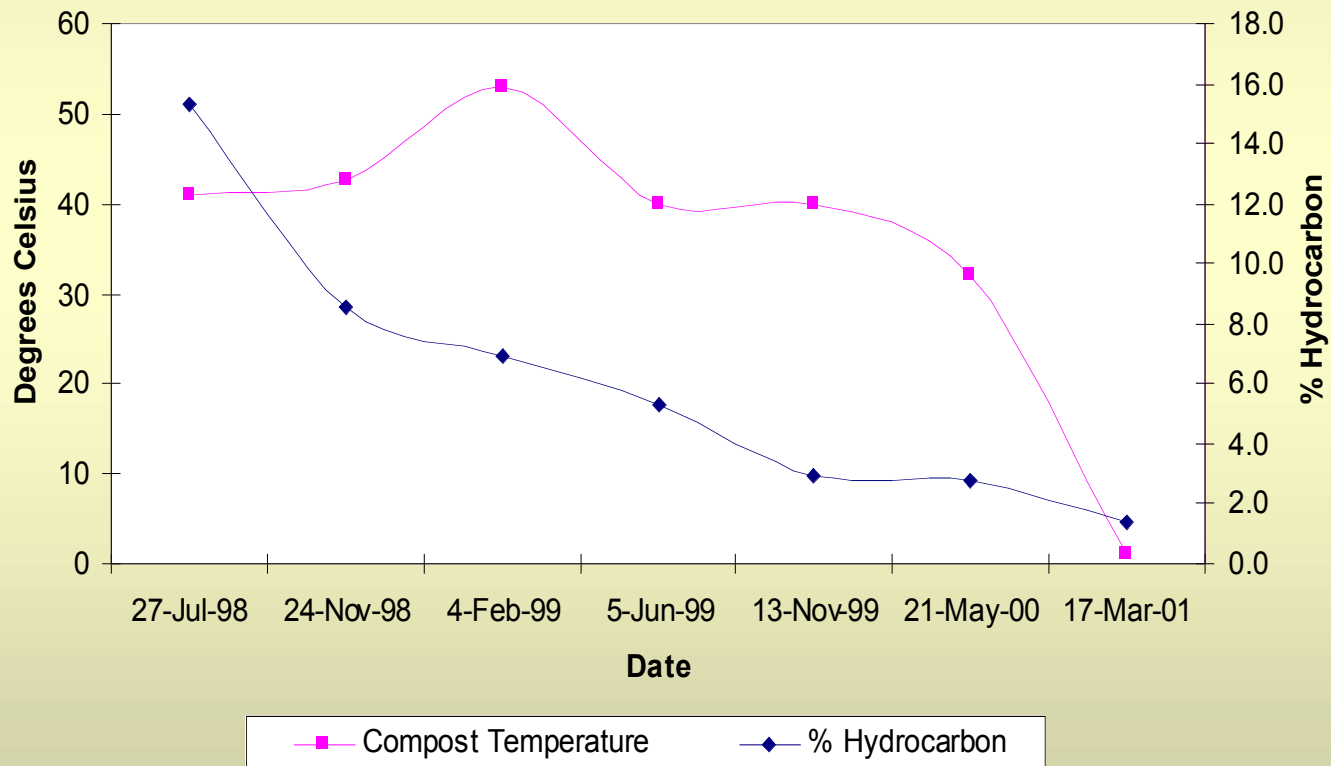
# Surfactant Performance



# Compost Maturation

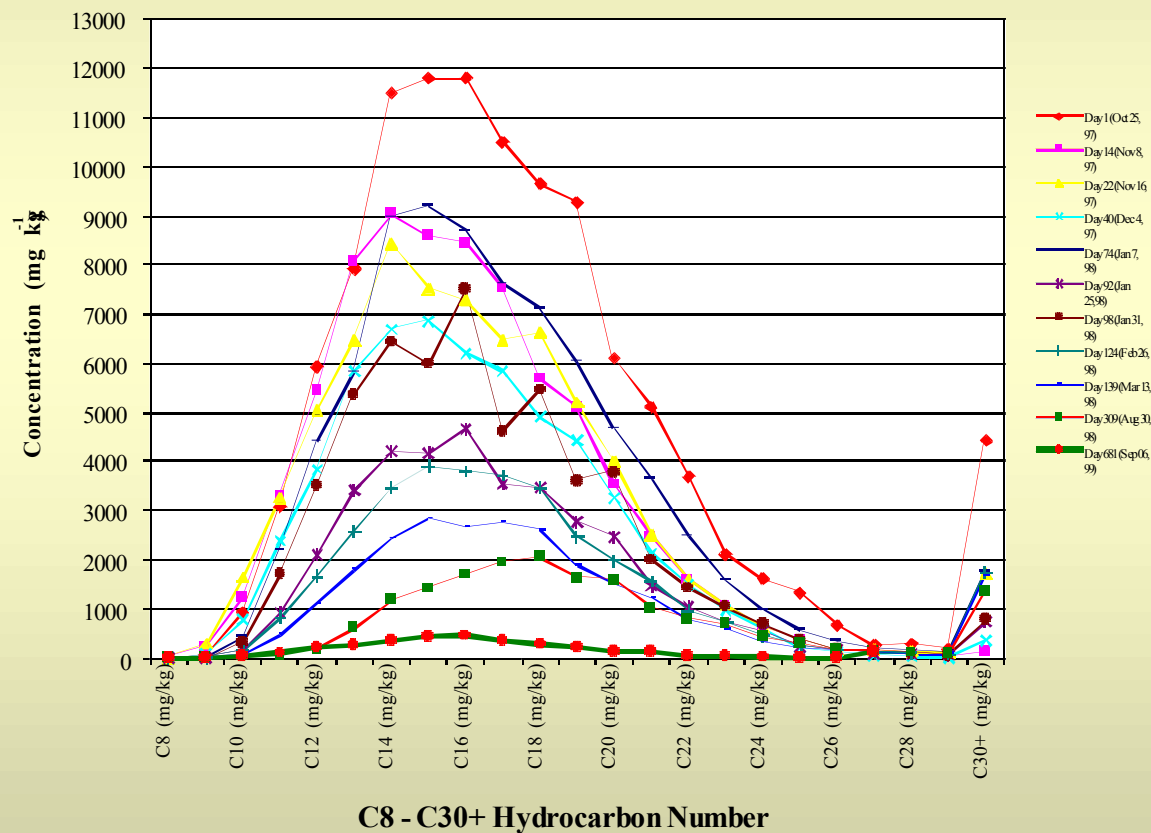
- Follows standard compost temp. pattern, near ambient when available carbon becomes restricting.
- Hydrocarbon at suitable levels for closure
- Pass Microtox analysis
- Promote and sustain vegetation growth
- Mature, NON-TOXIC compost can be land applied with regulatory authorization

# Hydrocarbon Content Versus Temperature





# WCH Pilot Project – Hydrocarbon Content and Range



# Vegetation Growth Trials

## Quick Vegetation Establishment



## Soil Erosion Control



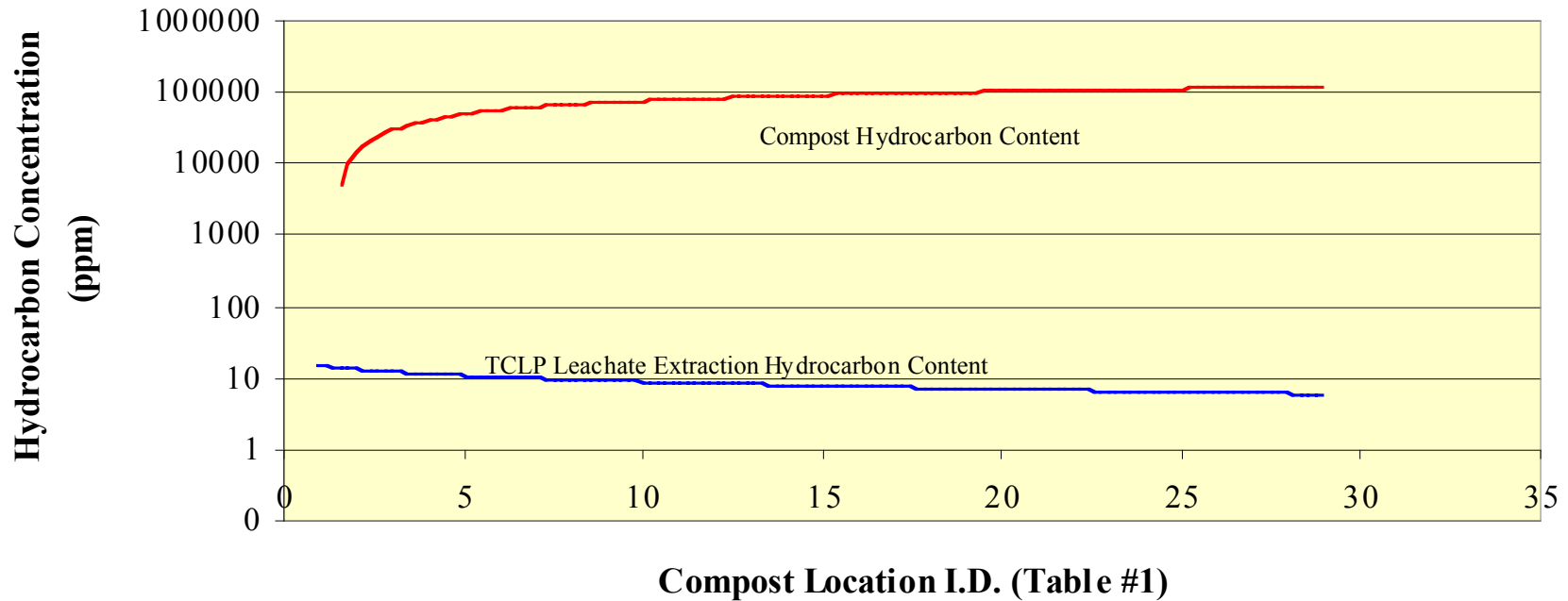
# Pilot Project

## Land Application of Compost Material

- Remaining hydrocarbons are very immobile
- Analysis from compost media met with land application loading rate criteria
- Initial growth trials indicated excellent vegetation performance
- Compost media was spread over leased areas and seeded following Forestry approval
- Pre-spreading soil samples were taken from the proposed spread areas, as well as areas downslope

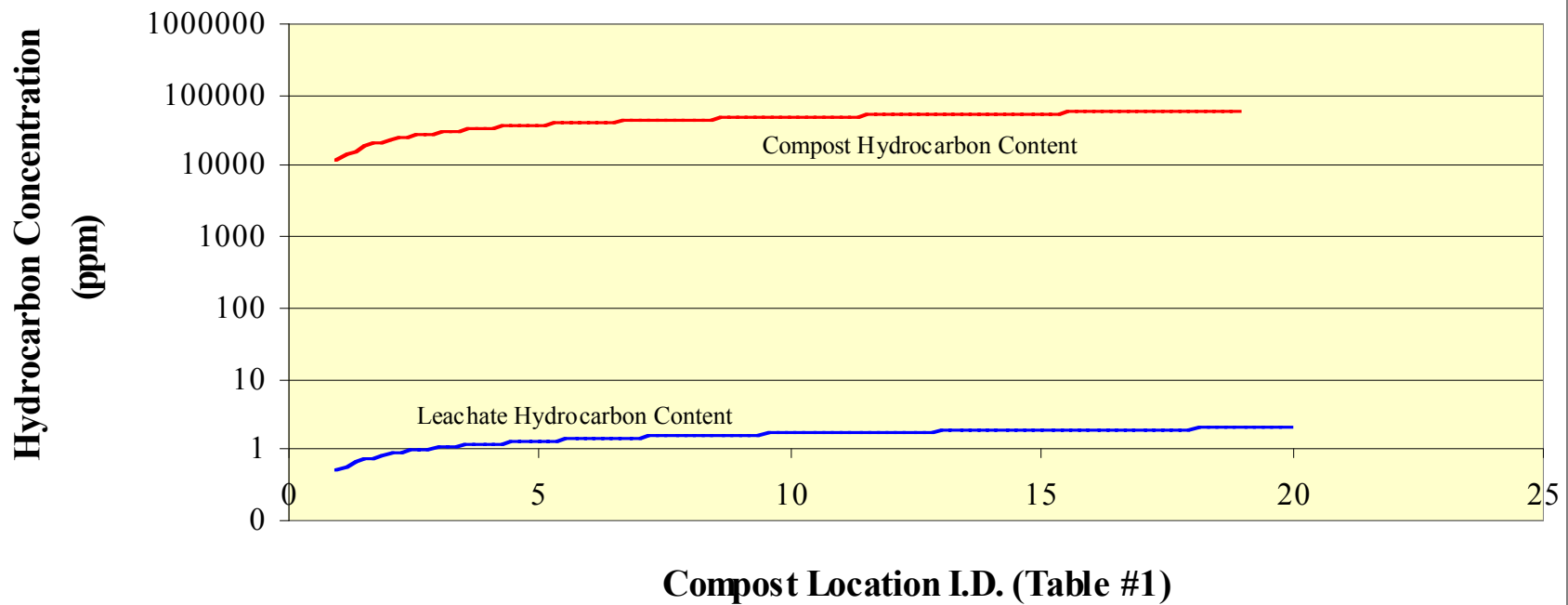
# Hydrocarbon Containment

**TCLP Leachate Hydrocarbon Analysis of Existing Compost Treatment Media (Semi-Log)**



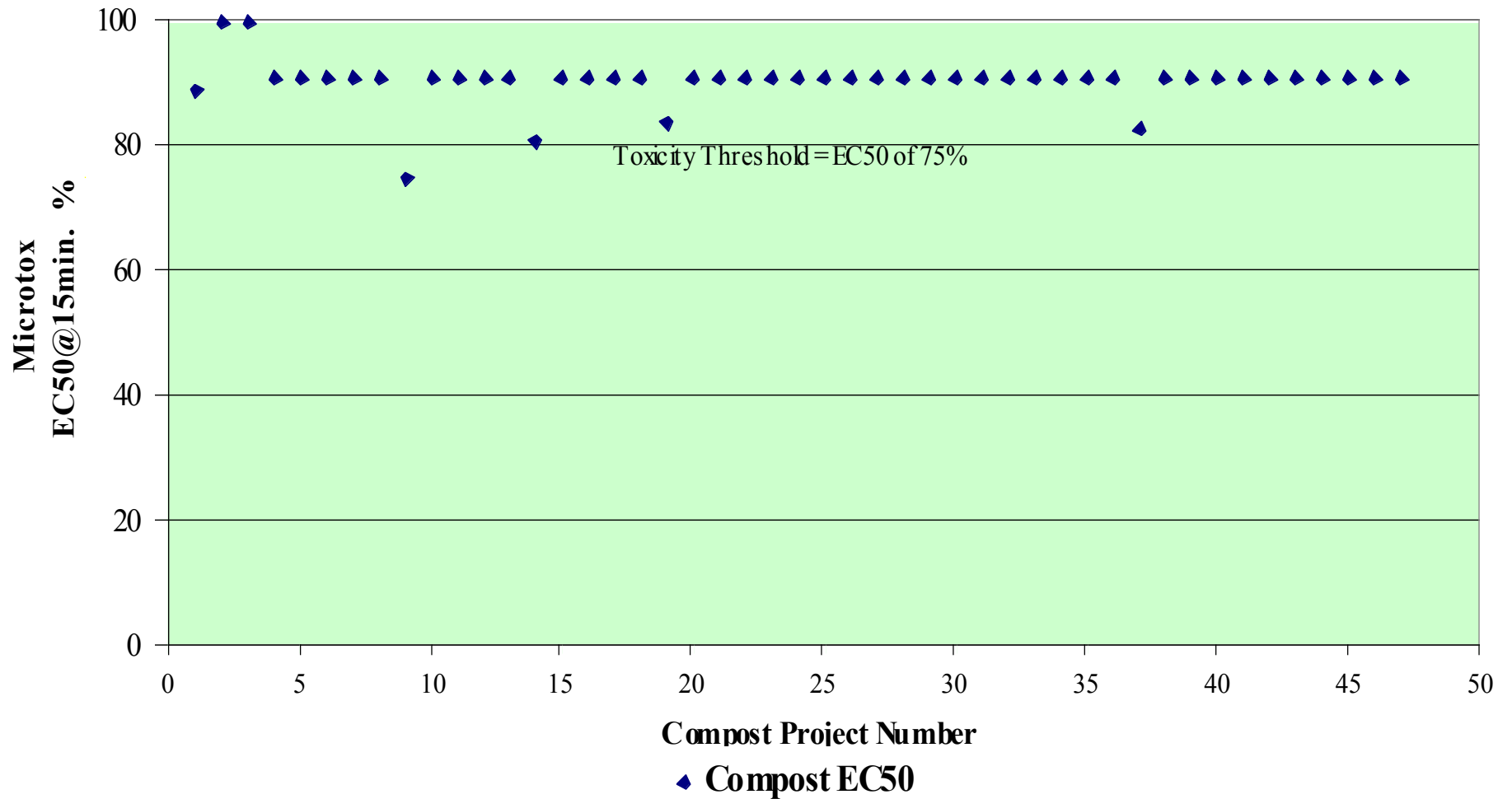
# Hydrocarbon Containment

**Hydrocarbon Analyses on Actual Leachate Contained at  
Newpark Special Waste Treatment Facilities (Semi-Log)**

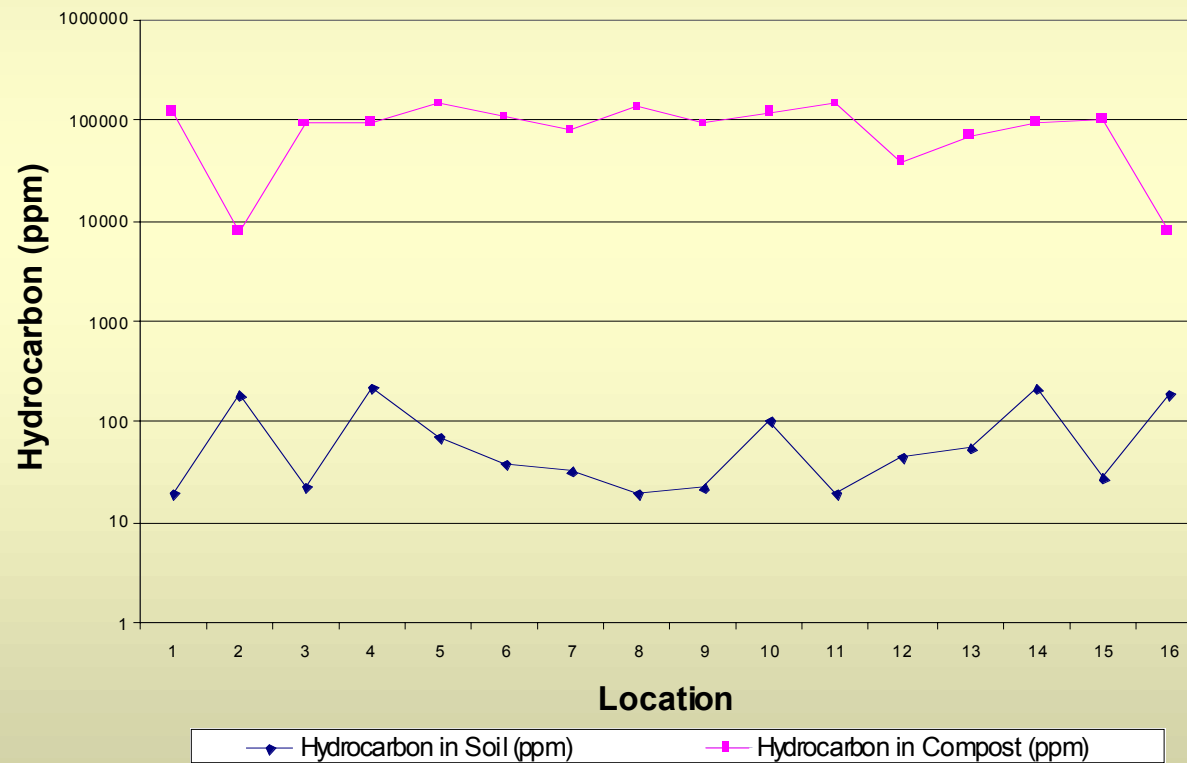


# Compost Microtox Bioassay, 1999 / 2000 Closure Locations

## EC 50 Values



# Hydrocarbon Content in Compost and Underlying Soil



# Benefits of Composting

- Liability maintained by operator only
- Clean site during drilling (CWD)
- No risk of off lease migration
- Disposal of oily liquid drilling waste
- Reduced treatment area
- Timely treatment process (<18-24 mo.)
- Scientifically verified and field proven method
- Compost end product, recycled use of waste streams (Organic matter returned to the soil)
- Wood fibre, secondary waste product recycling



# Discussion

