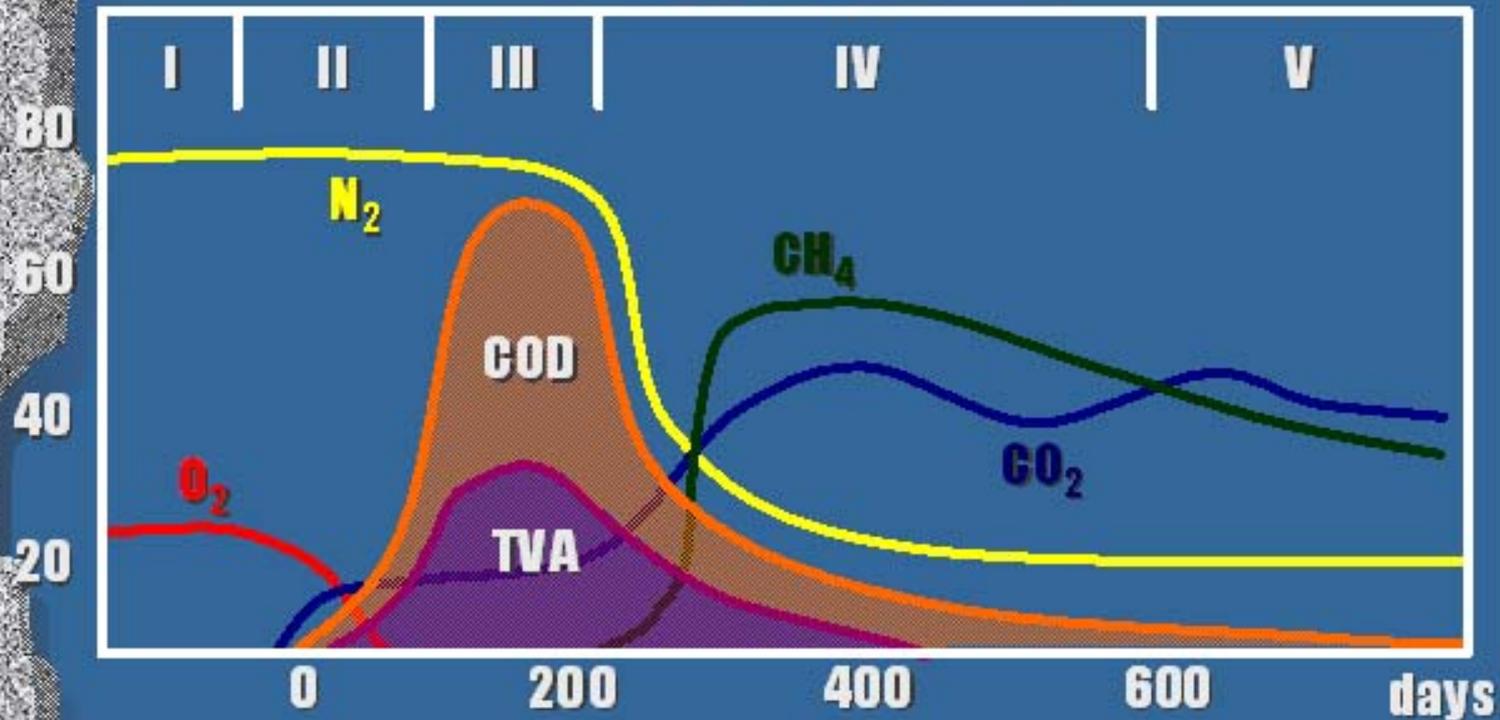


US EPA ARCHIVE DOCUMENT

Leachate Trends in Bioreactors and Closed Landfills

John Baker-Director
New Technologies

STABILIZATION PROFILE



DATA ANALYSIS APPROACH

1. Waste Degradation Indicator

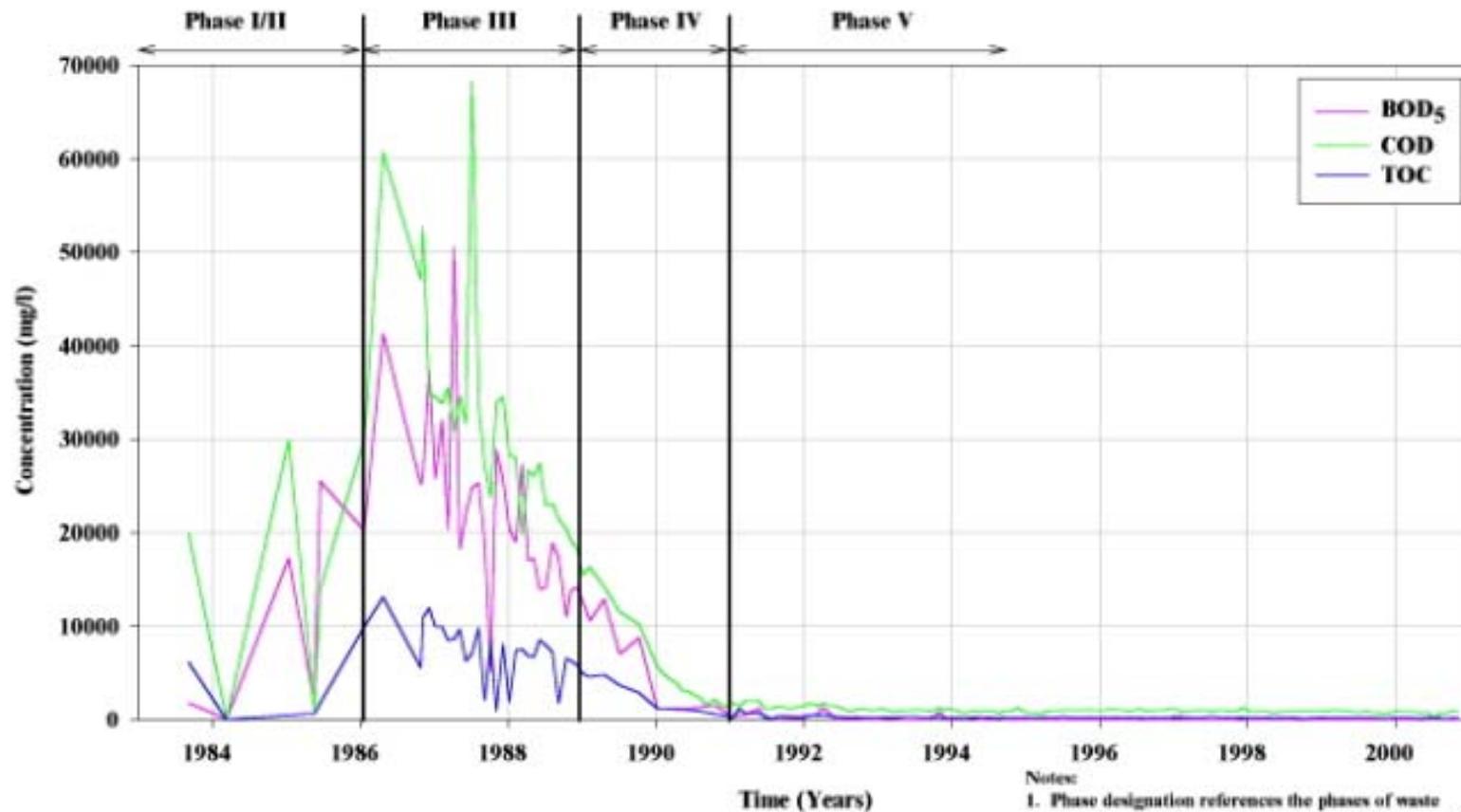
Parameters:

- **These parameters include BOD, COD, TOC, TVA, pH, and Total Alkalinity**
- **Parameters were evaluated by tracking concentration versus time and comparing to Pohland and Harper, 1986.**

LEACHATE QUALITY SUMMARY, BOD₅, COD, AND TOC

Evaluation of Historical Data at Leachate Recirculating Landfills
Area A/B Disposal Cells, Central Solid Waste Management Center

Sandtown, Delaware



Notes:

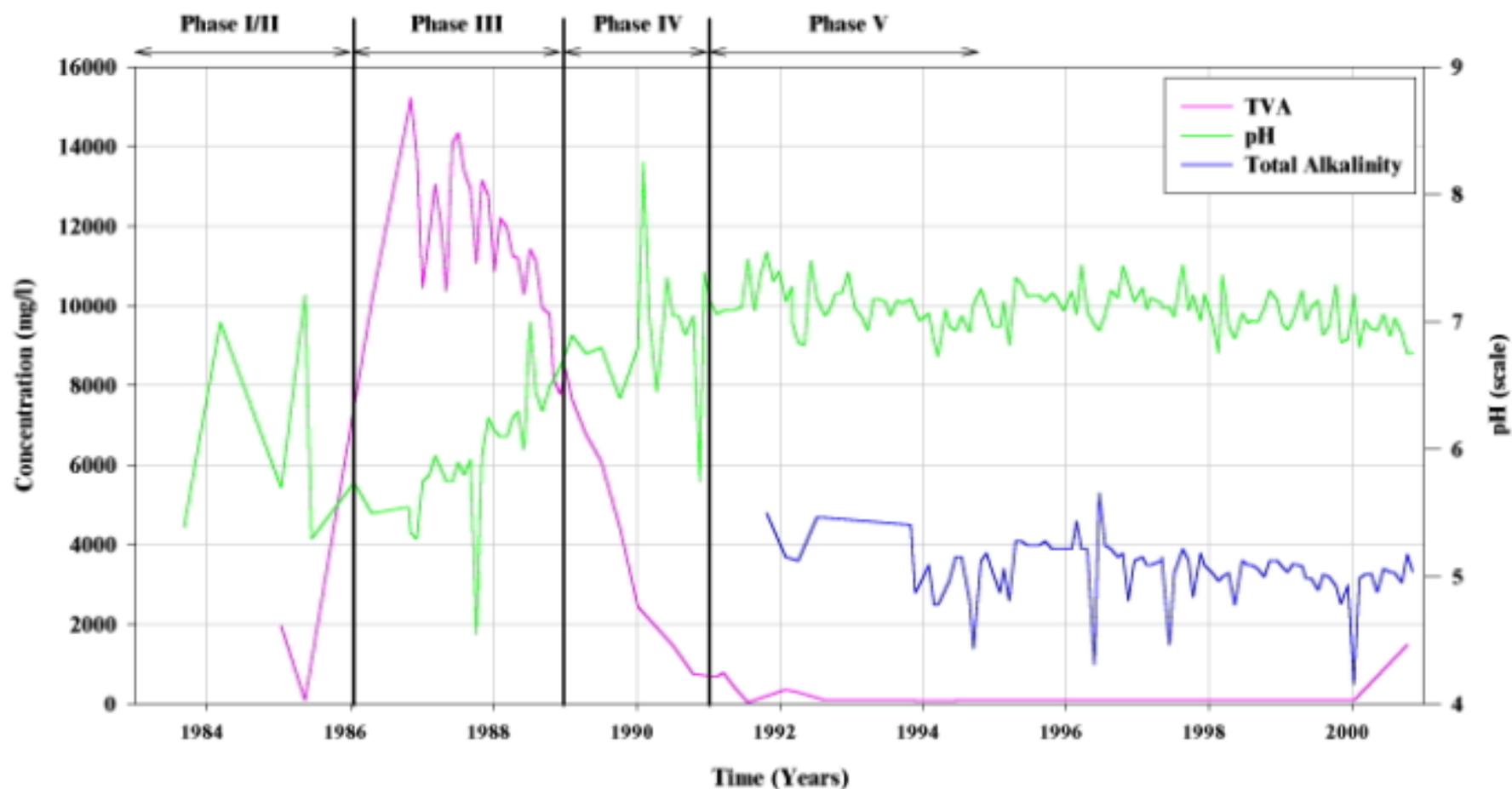
1. Phase designation references the phases of waste degradation presented in Figure 2, after Pohl and Harper, 1986.
2. BOD₅ concentrations that are greater than COD concentrations are assumed to be reported in error.

Figure 4

LEACHATE QUALITY SUMMARY, TVA, pH, AND TOTAL ALKALINITY

Evaluation of Historical Data at Leachate Recirculating Landfills
Area A/B Disposal Cells, Central Solid Waste Management Center

Sandtown, Delaware



Note:

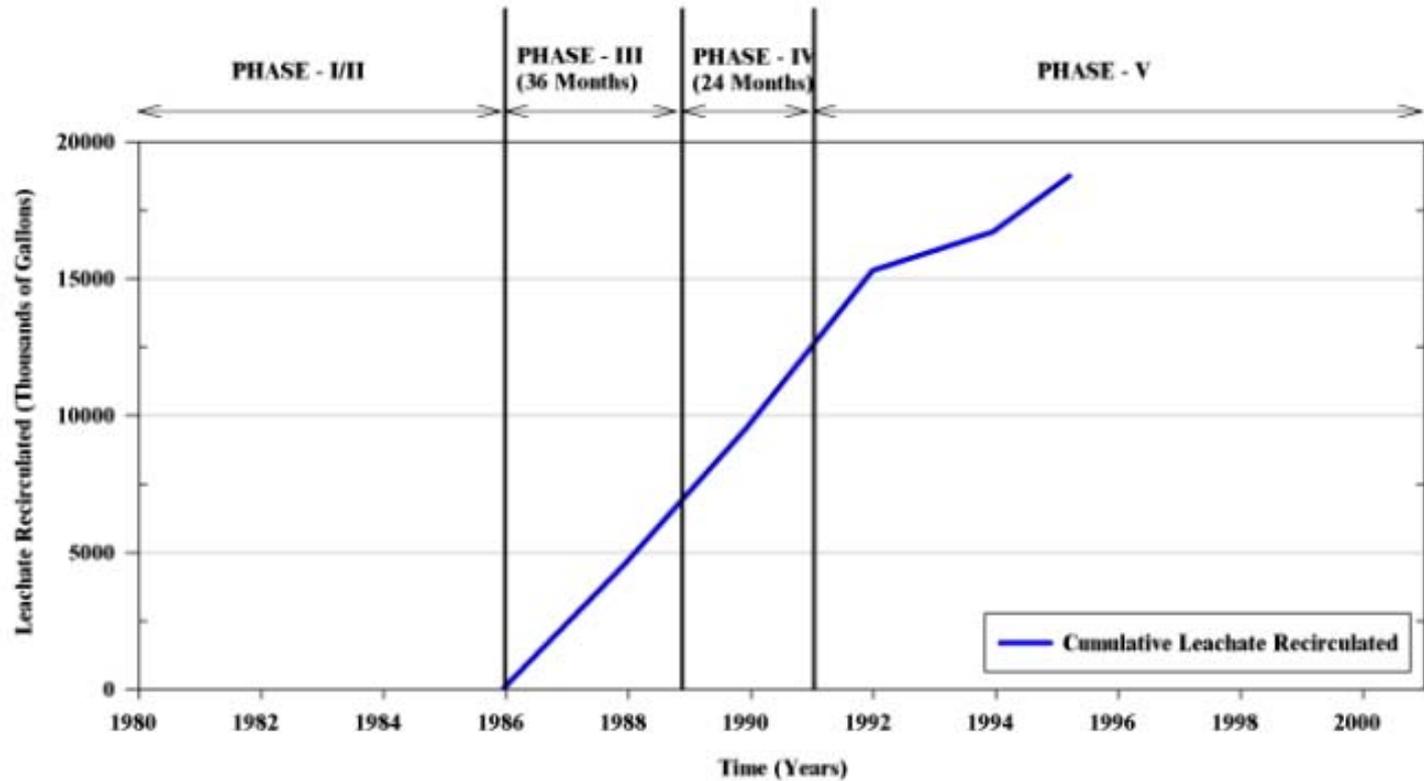
Phase designation references the phases of waste degradation presented in Figure 2, after Pohland and Harper, 1986.

Figure 8

WASTE DEGRADATION PHASE SUMMARY, DISPOSAL CELL B

Evaluation of Historical Data at Leachate Recirculating Landfills
 Area A/B Disposal Cells, Central Solid Waste Management Center

Sandtown, Delaware



Note:
 Phase designation references the phases of waste degradation presented in Figure 2, after Poliland and Harper, 1986.

DATA ANALYSIS APPROACH

2. Metals, VOCs and BTEX:

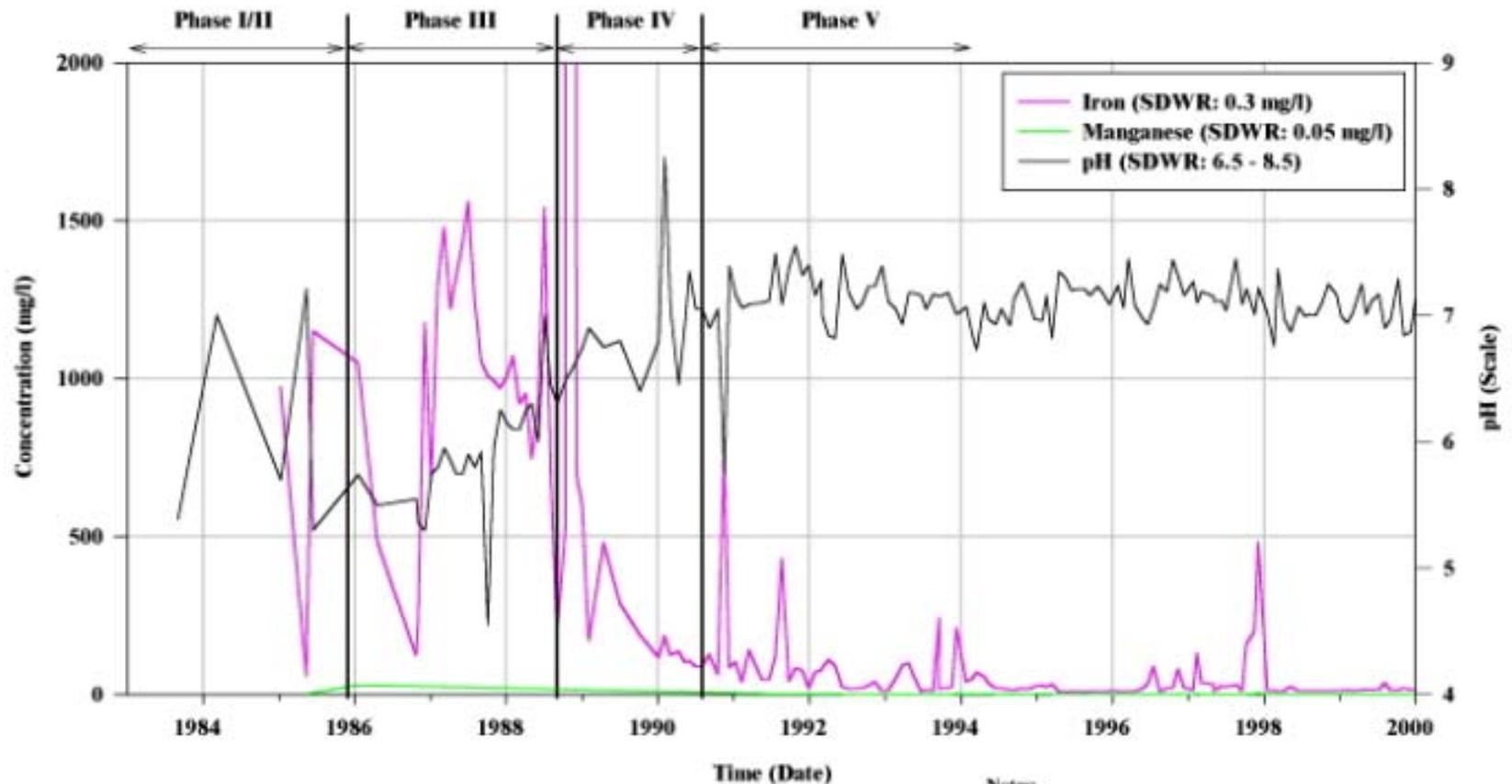
- Parameters were evaluated by tracking concentration versus time**
- Final concentrations of these parameters were compared to Drinking Water Standards, and findings of previous studies (Kilmer and Tustin, 1999)**

Figure 10

LEACHATE QUALITY SUMMARY, IRON, MANGANESE, AND pH

Evaluation of Historical Data at Leachate Recirculating Landfills
Area A/B Disposal Cells, Central Solid Waste Management Center

Sandtown, Delaware



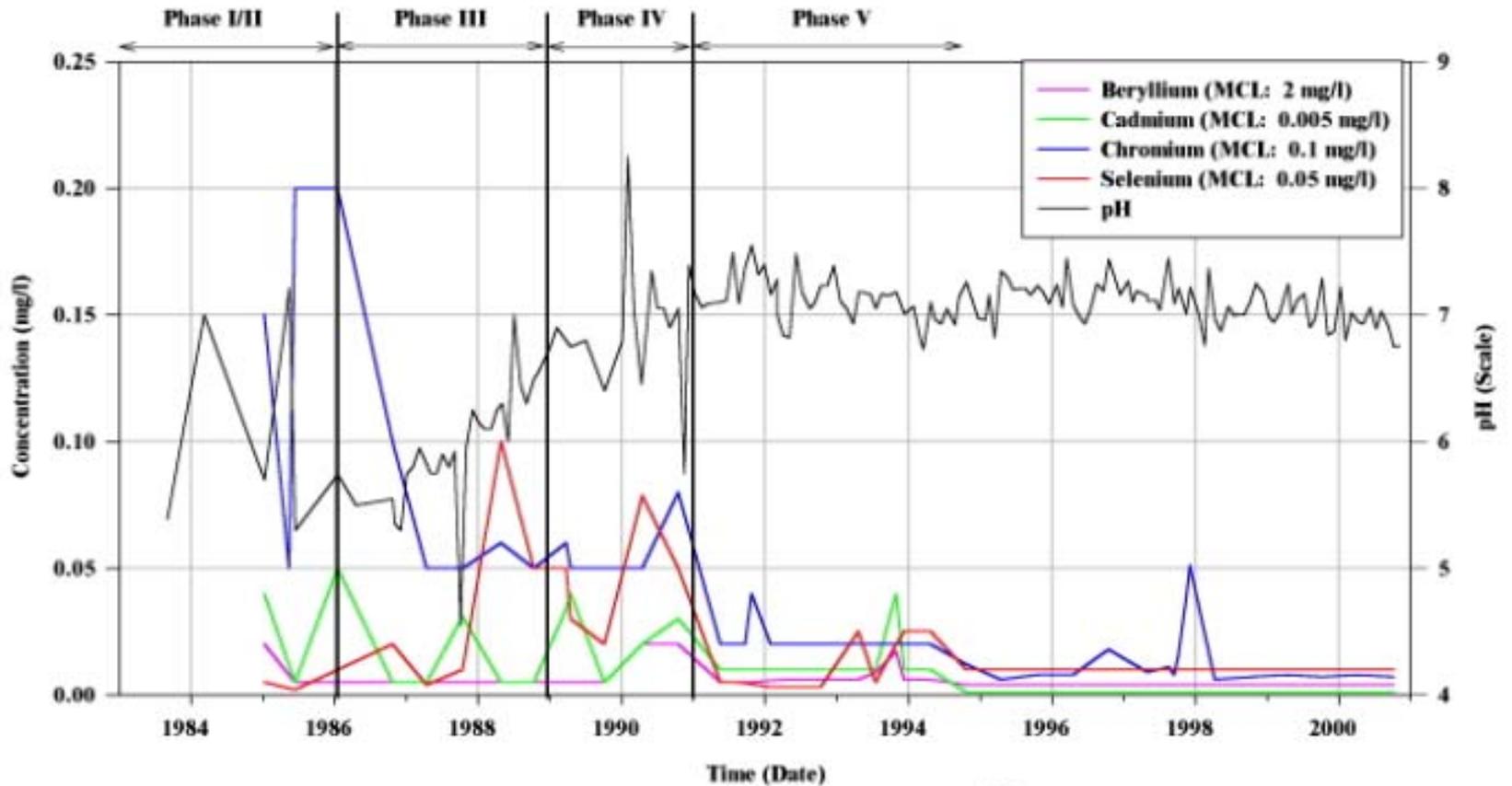
Notes:

1. Phase designation references the phases of waste degradation presented in Figure 2, after Pohland and Harper, 1986.
2. SDWR: Secondary Drinking Water Regulation.

**LEACHATE QUALITY SUMMARY, BERYLLIUM, CADMIUM
CHROMIUM, SELENIUM, AND pH**

**Evaluation of Historical Data at Leachate Recirculating Landfills
Area A/B Disposal Cells, Central Solid Waste Management Center**

Sandtown, Delaware

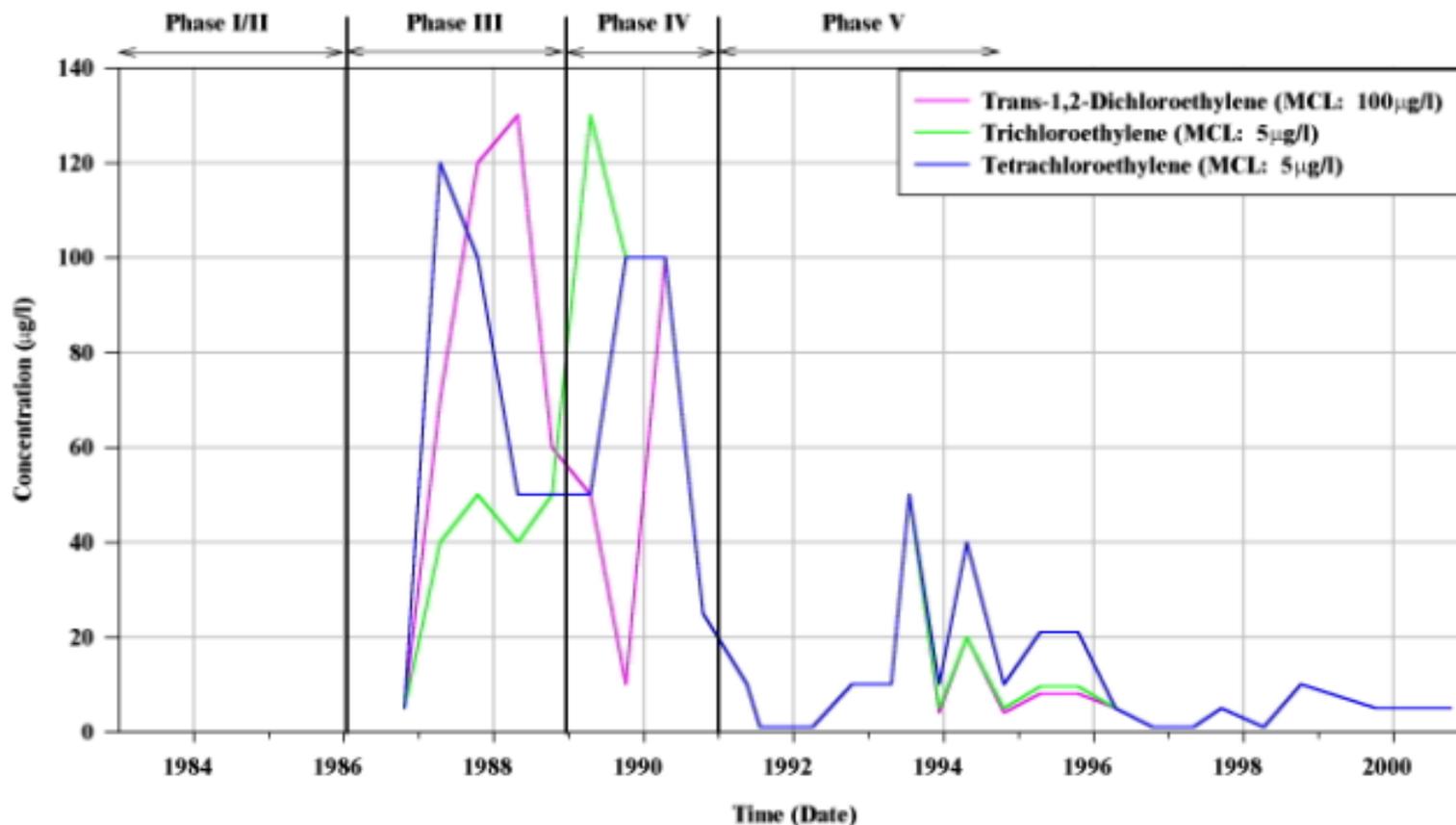


Note:
Phase designation references the phases of waste degradation presented in Figure 2, after Pohland and Harper, 1986.

LEACHATE QUALITY SUMMARY, TRANS-1,2-DICHLOROETHYLENE, TRICHLOROETHYLENE, AND TETRACHLOROETHYLENE

Evaluation of Historical Data at Leachate Recirculating Landfills
Area A/B Disposal Cells, Central Solid Waste Management Center

Sandtown, Delaware



Note:

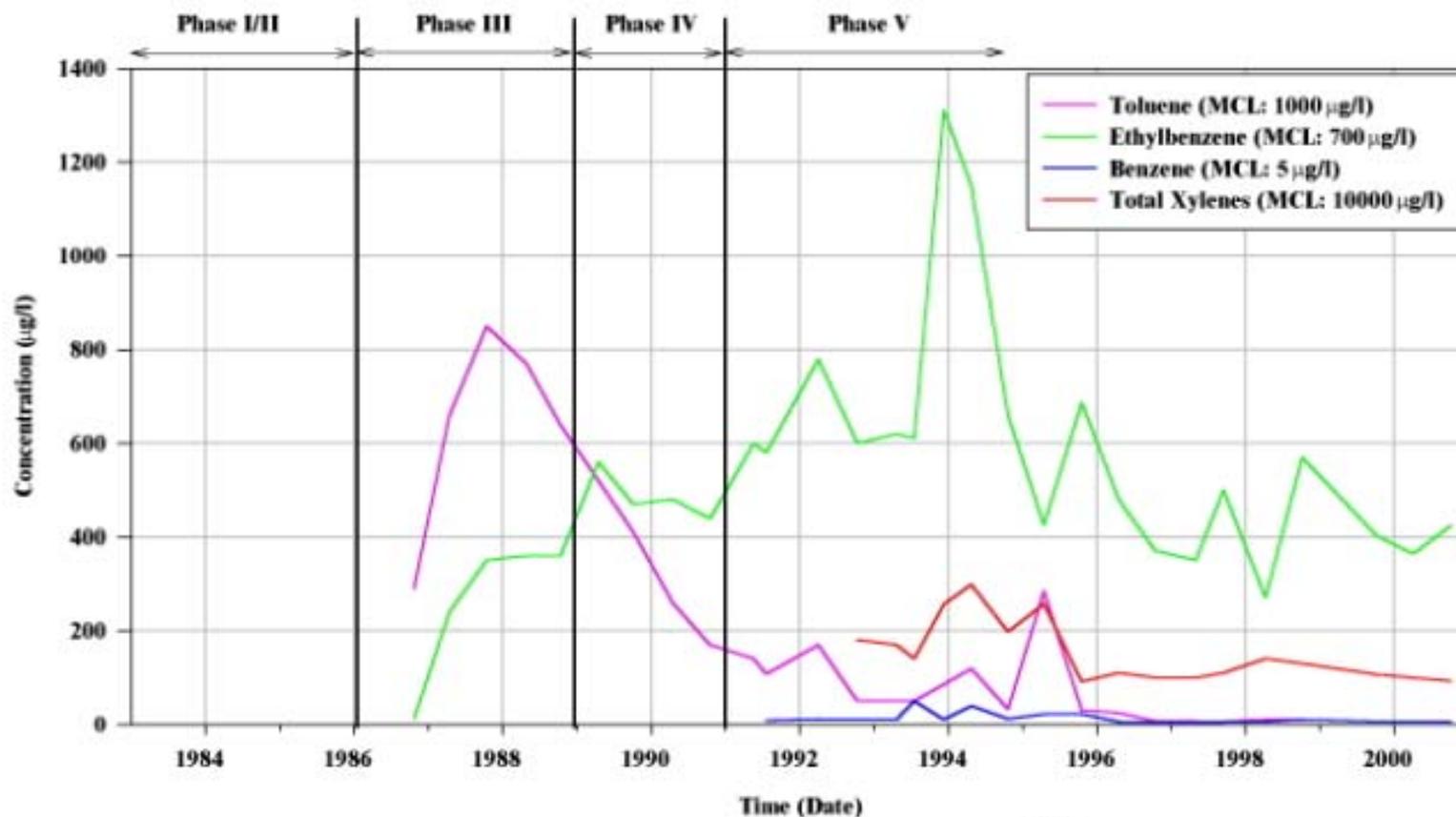
Phase designation references the phases of waste degradation presented in Figure 2, after Pohland and Harper, 1986.

Figure 13

LEACHATE QUALITY SUMMARY, BTEX

Evaluation of Historical Data at Leachate Recirculating Landfills
Area A/B Disposal Cells, Central Solid Waste Management Center

Sandtown, Delaware



Note:

Phase designation references the phases of waste degradation presented in Figure 2, after Poland and Harper, 1986.

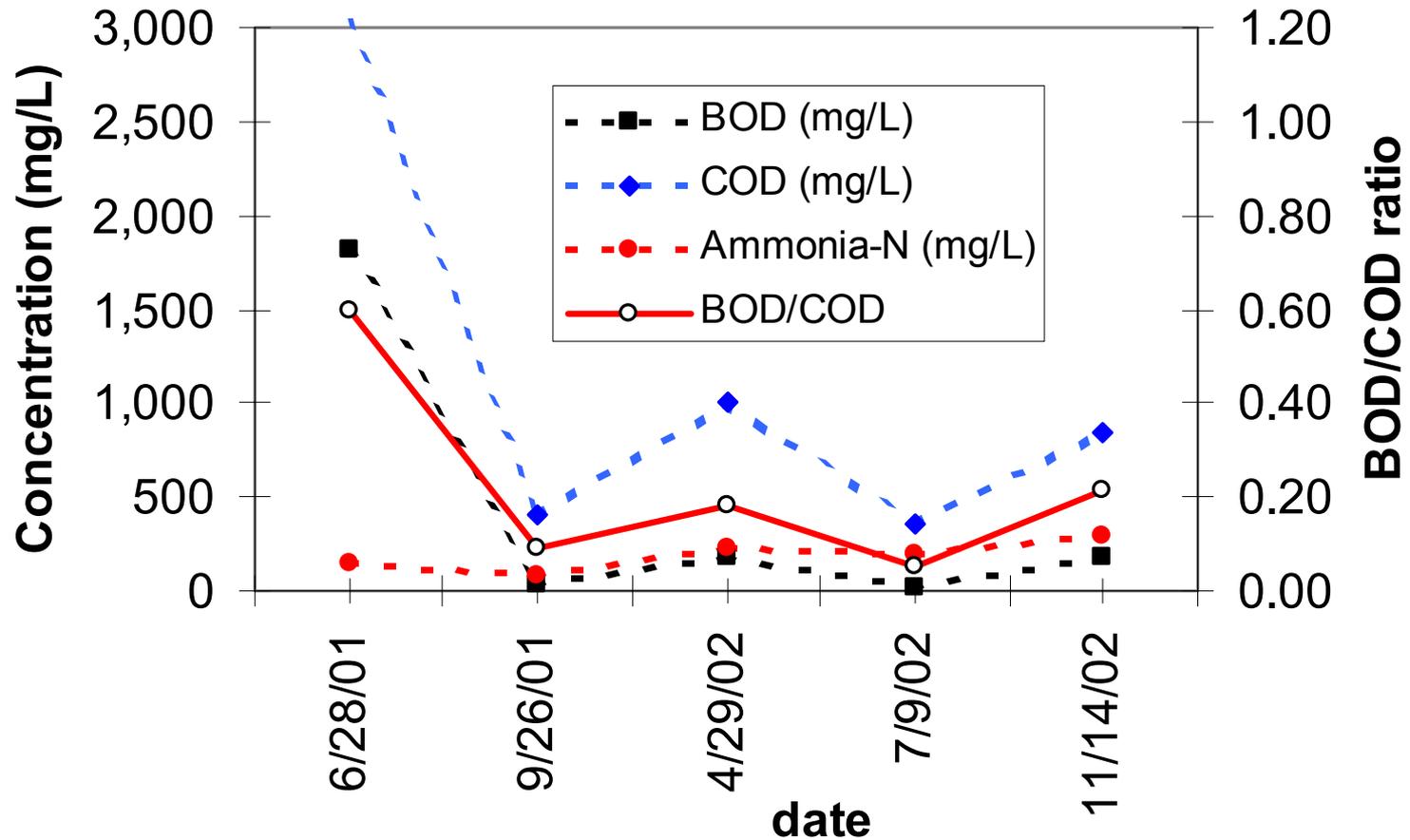
CONCLUSIONS

- The concentrations of waste degradation parameters in leachate followed the model suggested by Pohland and Harper, 1986.
- The data indicate that metals, VOCs and BTEX were not present at concentrations above their MCLs after a short period into Phase V.
- Based on WMI experience, this level of improvement in leachate quality is consistent with the improvements at other similarly operated leachate recirculating landfills.

Central Disposal Facility Bioreactor Data

Leachate Data

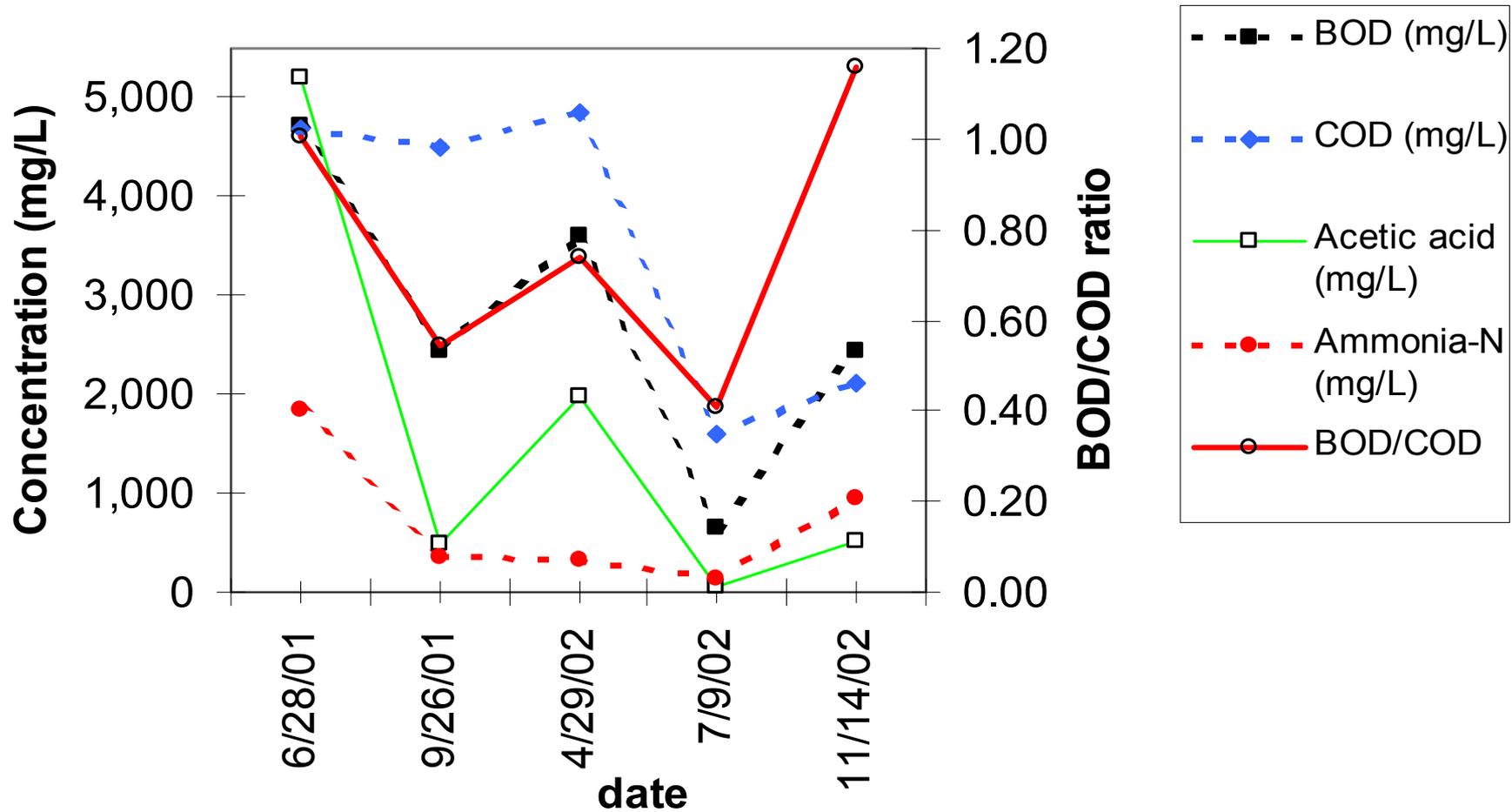
P-1 Sump



Central Disposal Facility Bioreactor Data

Leachate Data

P-2 Sump



Central Disposal Facility Bioreactor Data

Leachate Data Leachate Pond

